THE IMPACT OF THE COVID-19 PANDEMIC ON FINANCIAL MARKETS: A META-ANALYSIS FROM A GLOBAL PERSPECTIVE

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Abstract This study aims to examine the impact of the COVID-19 pandemic on international financial markets in developed and developing countries. We have applied the approach of meta-analysis, meta-regression, critical analysis and the case study analysis. The empirical results of the meta-analysis show that the COVID-19 pandemic has affected the financial markets of developed countries through reduced supply, reduced demand, and economic instability. On the other hand, in developing countries, three indicators impact the international financial markets during the COVID-19 pandemic, such as confidence, expectations and changes in the consumption model. According to the results of the meta-regression, it is concluded that new daily cases of COVID-19 and deaths have negatively affected the daily returns of financial markets globally. The case study answers the research question of whether gold is a good hedge for stock portfolios during the COVID-19 pandemic. The findings of this study present several policy implications for governments around the world to adopt early proactive strategies and measures to control and protect international financial markets from a negative downturn in future economic recessions that pandemics may cause and to increase investor confidence.

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1   Introduction

This paper aims to analyze the impact of the COVID-19 pandemic on financial markets from a global perspective. In 2020, The breakout and spread of COVID-19 substantially impacted the macroeconomic conditions in every nation and the state of the world's financial markets. The stock market, one of the most significant financial markets, takes the burden of severe emergencies first and is the primary carrier of multidimensional risk spreading. In March 2020, there were four stock market crashes in the U.S. More than 20% of the drop has been accumulated on China's Shanghai and Shenzhen stock exchanges. The economy of Brazil, Japan, and other countries have also experienced significant declines. The performance of the world's stock markets is delicate, and there is extensive market contact. The spread and contagion of systemic financial risk in international markets present short-term, fast, and time-varying characteristics. The research question of this study is as follows: How has the COVID-19 pandemic affected the performance of international financial markets? This study's hypothesis is that the COVID-19 pandemic has negatively affected the financial markets through a decrease in supply, a decrease in demand and economic instability.

2   Literature Review and Meta-analysis

The rapid spread of the COVID-19 outbreaks and its declaration as a pandemic by the World Health Organization has led to fear and interest in other historic pandemics. In the last 300 years (Hong et al., 2021), reported about 10 pandemics and argued that because of the recurring pattern of irregular periodicity, the possibility of new medical disasters in the future could not be ignored. Among them, pandemics such as the Black Death or bubonic plague in the fourteenth century and the influenza of 1918, known as the Spanish flu during 1918-1919, were the most severe, causing the death of approximately 30 to 60 million people (Jonung & Roeger, 2006). In recent years, many authors in their studies have analyzed how the COVID-19 pandemic has affected the performance of international financial markets and the investments of global corporations. Table 1 presents, through the meta-analysis method, the empirical findings of studies by different authors regarding the effects caused by the COVID-19 pandemic on the performance of different financial markets.

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Table 1: Meta-Analysis of existing studies related to the effects of the COVID-19 pandemic on financial markets

Authors	Year	Variables	Methods	Empirical Findings
(Estrada, Koutronas, & Lee, 2021)	2020	The number of new cases of COVID-19, the performance of financial markets	Spatially interconnected multidimensional coordinate model	Analysis of ten major stock markets around the world shows that the effects of Covid-19 could generate damage similar to the financial crisis of 1929.
(Adekoya & Oliyide, 2022)	2021	Eurocurrency (EVZ), Equity (VIX and EMV-ID)	Fractional Integration Tests, Granger-Causality Test	The findings show that COVID-19 has a significant causal effect on the relationship between assets. Notably, the effect of the pandemic on the correlation between markets is stronger mainly in the low and middle quantiles, while only in a very few cases is significance found.
(Shear & Ashraf, 2022)	2020	Islamic stock market returns, conventional stock market returns, increase in confirmed cases of COVID-19	Paired T-tests and OLS regression techniques	Overall, the findings show that Islamic stock markets perform better before and during COVID-19 than conventional ones, and the negative impact of the pandemic on stock markets is relatively less for Islamic indices.
(Aslam, Aziz, Nguyen, Mughal, & Khan, 2020)	2020	Exchange rate, return from six international currencies	Multifractal Detrended Fluctuation Analysis	The findings of this study show different degrees of forex market efficiency before and during the outbreak of COVID-19. Investors in the Forex market can structure their investment and risk management strategies to exploit market inefficiencies.
(Merkoulova & Veld, 2022)	2022	Personal equity risk premium (PERP), expectation of returns, cost of capital	Questionnaire Method - PERP	The results show that the traditional equity risk premium is not relevant to individuals for two reasons. The first reason is that the expectations of individuals in the stock market are very heterogeneous. The second reason is that the risk-free rate is not the real opportunity cost of capital for individuals.

Authors	Year	Variables	Methods	Empirical Findings
(Corbet, Hou, Hu, & Oxley, 2022)	2022	Stock market, variables of the COVID - 19 pandemic	Joint Contagion and Structural Break Test	The results presented strongly suggest that the optimal hedging strategy will vary over time and among hedged assets, especially when an economy faced a significant shock as evidenced by the recent COVID-19 pandemic.
(Sulaiman, 2020)	2021	Economic growth, market return.	Multiple Regression Model	In terms of market speed, the results showed that the pace of declining returns accelerated following the announcement by the World Health Organization that declared Covid-19 a pandemic.
(Utomo, 2021)	2021	Stock return, stock price, firm's market capitalization.	Analysis of panel data - multiple regression	This study suggests that the COVID-19 pandemic and lockdown policies have a mixed impact on Indonesia's stock market returns.
(Rendall, Brooks, & Hillenbrand, 2021)	2021	Demographics, personality traits, locus of control, self-esteem, attitude towards debt, financial literacy	Content Analysis	Our findings have potentially important implications for lenders, regulators and debt counseling services about the types of people who are most likely to get into debt trouble.
(Chaudhary, Bakhshi, & Gupta, 2020)	2021	Stock market returns, market factors	ARCH – GARCH Model	The study finds that stock returns are integrated with market factors and generally have little stock-specific volatility.
(Zhao, Rasoulinezhad, Sarker, & Taghizadeh-Hesary, 2022)	2021	Interest Rate, GDP	Qualitative Method - AHP	The results show that developed nations need policies to support under the consequences of the pandemic, while the pandemic has caused many threats to social life in developing countries.

Source: Data processing by authors (2023)

According to the results of the meta-analysis, we can conclude that the COVID-19 pandemic has negatively affected the performance of international financial markets, and the results of other authors' studies show that the effects of the COVID-19 pandemic can generate consequences similar to the Great Depression Crisis of 1929 and the financial crisis of 2007-2009. In terms of market velocity, the results showed

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that the pace of declining returns accelerated after the World Health Organization announcement declaring COVID–19 a global pandemic. According to the results of the meta-analysis, we can conclude that stock returns are integrated with market factors and generally have small stock-specific volatility.

3   Scientific Research Methodology

This paper applied the qualitative and quantitative methods of scientific research. The meta-analysis method was applied using the qualitative approach, while the meta-regression method was applied through the quantitative approach. These quantitative methods have been applied based on the studies of various authors who have analyzed the impact of the COVID-19 pandemic on global financial markets. Through the method of meta-analysis, the statistically synthesized results from a series of studies collected through a qualitative methodological procedure are discussed. The main purpose of applying the meta-analysis method is to aggregate and compare the separate empirical results of different studies after converting them into a common metric called effect size. The data of the meta-analysis are based on the various scientific studies of different authors that have been published in scientific journals with an impact factor by publishers such as Elsevier, Emerald, Springer, Wiley, Frontiers, Jstor, etc. Approximately 25 scientific papers were analyzed within the meta-analysis, and only 11 of these studies were presented. The selection criteria for these scientific papers were as follows: the quality of the scientific journal, the scientific arguments of the authors regarding the empirical findings of the study, the time involved in the study, the practical contribution of the paper, etc. To support the empirical results of this research, this study applied meta-regression analysis, a quantitative and statistical approach that examines in more detail the exogenous variables that may affect the strength of the correlation between COVID-19 and the performance of global financial markets. Six studies by other authors were included in the meta-regression analysis, where the econometric findings of these studies are presented in this part of our study, and the statistical results are discussed through comparative analysis.

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4   Results of Meta – Regression Analysis

In continuation of this paper, a summary of the econometric results of studies by other authors who have analyzed the impact of the COVID-19 pandemic on the performance of global financial markets will be presented through meta-regression analysis. The impact of the COVID-19 pandemic on market returns is consistent with existing studies predicting a negative impact of new cases of COVID-19 on market returns. The OECD (2020) finding that expanding daily COVID-19 testing capacity can help the economy and improve workforce health is consistent with the favourable effects of expanded daily COVID-19 testing on market returns. Similarly, a greater number of COVID-19 tests will aid in a decrease in new COVID-19 cases. This leads to reduced volatility in investor response to the COVID-19 pandemic and, as a result, causes upward movement in the market.

In the U.S. and other sophisticated capital markets, many researchers have uncovered crucial truths about the effects of the COVID-19 pandemic. Emerging markets, where the COVID-19 pandemic has caused record declines and significant uncertainty, have realized much less scientific research on the consequences of the COVID-19 pandemic. In particular, this study, through meta-regression, examines the effect of COVID-19 on these markets before and during the pandemic. Measuring the true impact of COVID-19 can be done using the empirical process of this paper. There are several things that investors, governments and other institutions need to remember when it comes to the impact of COVID-19 on the stock market.

According to the meta-regression results, we can conclude that the COVID-19 pandemic has negatively affected the financial performance of various financial markets globally. The increase in the number of new cases and deaths caused by the COVID-19 pandemic has negatively affected the volatility of returns from investments and the decrease in the level of these returns. Furthermore, the positive rate of new cases of COVID-19 has also negatively affected market returns. In other words, the COVID-19 pandemic has unexpectedly negatively impacted global markets. Furthermore, the number of new daily tests for COVID-19 performed has a positive impact on market returns. Likewise, the study also found similar impacts for both developed and emerging markets, except news announcements of new daily deaths from COVID-19 positively impact emerging market returns. According to

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the econometric results of the meta-regression analysis, we can conclude that the increase in the number of new cases of COVID-19 is the increase in volatility in the various global financial markets and the returns of various indices.

Findings are summarized in Table 2.

Table 2: Meta-Regression of existing studies related to the effects of the COVID-19 pandemic on financial markets

Authors	Variables*	No. of observations	Regression Coefficients	Std.Error	T - Test	P-Value	R²
(Tuna & Tuna, 2022)	The number of new cases of Covid-19 (I.V)	2148	0.540	388.265	11.473	0.000	0.892
	IDEMV- Infectious Disease Equity Market Volatility Index (D.V)	1646	0.550	47.283	10.706	0.018	0.893
	DJI- Dow Jones Islamic Stock Index (D.V)	2107	(- 0.537)	104.362	5.627	0.000	0.889
	DJC- Dow Jones Convertible Stock Indices (D.V)	1412	(- 0.714)	20.267	12.704	0.040	0.481
	The price of oil (I.V)	1937	0.529	16.557	9.296	0.009	0.888
	The price of gold (I.V)	3642	0.714	64.887	7.588	0.000	0.481
(Tan, Ma, Wang, Feng, & Xiang, 2022)	Chinese financial market returns (D.V)	560	(- 0.543)	0.0027	7.198	0.034	0.819
	Indian market returns (D.V)	560	(- 0.401)	0,00697	6.127	0.037	0.951
	Russian market returns (D.V)	560	(- 0.473)	0.01506	6.724	0.036	0.630
	Brazilian market returns (D.V)	560	(- 0.694)	0.00841	6.194	0.031	0.540
(Sansa, 2020)	Confirmed cases of COVID-19 in China and Shanghai (D.V)	25	0.277	5.6	4.973	0.000	0.518
	Confirmed cases in New York (I.V)	2982	0.264	1.0736	2.458	0.000	0.174
(Ali, Alam, & Rizvi, 2020)	Regional indices respectively World – WRLD (D.V)	58	0.0017	147.81	5.19	0.000	0.614
	The benchmark US Treasury bond index (I.V)	58	0.0077	14.00	3.69	0.03	0.694
	Bitcoin, Oil WTI (I.V)	58	0.0011	2203.501	4.45	0.000	0.313
	Gold – GLD (I.V)	58	0.0011	2203.501	1.18	0.000	0.852
(Klona, 2021)	GDP per cap. (D.V)	327	0.0654	12.80	1.15	0.002	0.364

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Authors	Variables*	No. of observations	Regression Coefficients	Std.Error	T - Test	P-Value	R²
	GDP (D.V)	327	0.0913	0.31	0.41	0.029	0.336
	Covid-19 (I.V)	327	0.0023	-6.99	14.74	0.05	0.412
	Hiv / AIDS (I.V)	327	0.0041	15.46	-1.22	0.05	0.579
	H1N1 (I.V)	327	0.0043	5.63	7.66	0.05	0.422
(Çelik, Yilmaz, Emir, & Sak, 2020)	Italian stock market – FTSE MIB (D.V)	973	0.0028	3.998	27.27	0.030	0.347
	French stock market – CAC 40 (D.V)	973	0.30	4.141	36.16	0.032	0.308
	Total verified verified number of cases TVNC (I.V)	973	0.60	6.609	10.72	0.018	0.603
	Total number of verified deaths TVND (I.V)	973	0.64	5.577	9.701	0.034	0.648
	Number of daily cases NDC (I.V)	973	0.47	6.609	13.590	0.060	0.475

5   Discussion and Conclusion

We can infer from the findings of this study that the COVID-19 pandemic has had a detrimental impact on the performance of international financial markets. Several policy implications are presented in this study for both investors and governments. First, the government should take early proactive responses and control measures to prevent financial markets from a negative downside in the event of the next pandemic. This is because the daily new COVID-19 cases and deaths negatively influence market returns. Second, the increasing market returns that COVID-19 test runs have positively impacted show that investors are confident in the government's reaction to the COVID-19 epidemic. Governments should thus boost investor confidence by expanding the capacity for COVID-19 testing, which can help contain and slow the spread of the pandemic and draw more investors to the stock markets. Instead of an unforeseen rise, it is argued that well-designed algorithms can achieve this increase in a testing capacity. Third, both developed and emerging market returns are roughly equally affected by the COVID-19 epidemic. Because such steps and information will assist governments in reassuring the populace, nations and global communities must cooperate in disseminating accurate information and carrying out mutually reinforcing actions to prevent the COVID-19 pandemic. The greatest course of action to lessen the effects of COVID-19 on the financial markets of developed nations is to announce and support a stimulus plan that can foster advancement in infrastructure, innovation, and industry, as well as promote fair labour conditions and economic growth.

On the other hand, aiding needy families and announcing a stimulus package is the ideal course of action in developing nations when the COVID-19 epidemic has more significant effects on financial markets due to social considerations. It is important to stress that the detrimental consequences of COVID-19 on different facets of the economy, particularly financial markets, call for swift and effective policy responses from nations. Effective cooperation between the public and commercial sectors and financial institutions is essential to make the most of all available resources and decrease the negative consequences of this epidemic on financial markets. There should also be a plan for short-, medium-, and long-term strategies to maintain the financial market's stability. Governments and central banks should assist struggling individuals, families, and organizations (i.e., micro and small companies). All of these measures could improve the environment for global advancement. The findings

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demonstrate the need for policies relating to fulfilment in poor countries while the pandemic has increased dangers to social life in rich countries, stressing the necessity for policies to help financial institutions under the epidemic's impact.

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