Journal of Administrative and Economic Sciences • Vol 18, Issue 1 (2025) • p 363-383

Evolving Market Dynamics and Investor Behavior: Lessons from the Pandemic's Impact on Saudi Arabia's Financial Landscape

Ibrahim Alamir

Department of Finance and Banking, College of Business Administration, Jazan University, Jazan • Saudi Arabia

iamir@jazanu.edu.sa

Abstract:

This study delves into the intricate dynamics of the Saudi stock market, specifically the Tadawul All Share Index (TASI), during the COVID-19 pandemic. It explores the multifaceted relationship between investor sentiment and market responses, considering various influential factors such as local market confidence, regional stability, and government policies. Through a comprehensive analysis of TASI's performance in comparison to major global indices like the Dow Jones, NASDAQ, and S&P 500, the study reveals unique market behaviors and the relative resilience of the Saudi market amidst global economic upheaval. Key findings include the TASI's ability to maintain stability despite global volatility, with a low to moderate positive correlation with these global indices and a 15% increase in trading volume during key intervention periods**.** The significant impact of the Saudi government's economic and public health measures on stabilizing the market is also highlighted. The study's timeframe spans from January 2020 to November 2023, offering a timely insight into the market's adaptation to an unprecedented global crisis. The research contributes to a deeper understanding of the Saudi stock market's dynamics during the pandemic, providing valuable insights for investors, policymakers, and the broader Saudi economy.

Keywords: Investor Sentiment, Tadawul All Share Index (TASI), COVID-19 Pandemic, Saudi Stock Market, Market Resilience, Economic Policy.

JEL Classification codes: G14, G41, F62.

1. Introduction

The advent of the COVID-19 pandemic in early 2020 marked a pivotal moment in modern history, profoundly impacting public health, economies, and financial markets globally (Ashraf, 2020; Pak et al., 2020). As countries grappled with the spread of the virus, imposing lockdowns and travel restrictions, the world witnessed a paradigm shift in economic activities and investor behavior. The pandemic's uncertainty led to heightened volatility in financial markets, presenting a unique opportunity to study the dynamics of investor sentiment and market responses. While extensive research has been conducted on the effects of the pandemic on developed markets, there remains a significant gap in understanding how emerging economies, particularly those with distinct economic structures like Saudi Arabia, have navigated this crisis (Alzyadat & Asfoura, 2021). Emerging markets often exhibit unique characteristics due to their different economic dependencies, regulatory environments, and investor behavior patterns. These differences make it crucial to explore their responses to global crises like COVID-19 independently from those of developed economies. Despite its importance, the Saudi stock market, represented by the Tadawul All Share Index (TASI), has not been extensively analyzed in this context. Existing literature is predominantly focused on Western and Asian markets, neglecting the unique socio-economic and political factors that influence market behavior in Saudi Arabia (Najaf & Chin, 2024; Ngwakwe, 2020).

This study addresses this gap by providing an empirical analysis of the Saudi stock market's response to the pandemic, focusing on the interplay between investor sentiment, market behavior, and government policies. Specifically, it examines how investor sentiment, influenced by both local and global factors, drove market movements in Saudi Arabia during the pandemic. The research problem centers on understanding the extent to which traditional financial theories, which often assume market efficiency and rationality, apply to an emerging market like Saudi Arabia under extreme conditions. By integrating behavioral finance theories with empirical data from the Saudi market, this study aims to provide a more nuanced understanding of market dynamics in the face of unprecedented global disruptions.

This research holds significant value both academically and practically. Academically, it contributes to the growing body of knowledge in behavioral finance by exploring the role of investor sentiment in an emerging market context, thereby filling a critical gap in the literature. Practically, the findings are poised to offer valuable insights for investors, financial analysts, and policymakers in Saudi Arabia and similar markets. By dissecting the market responses and investor sentiment during the pandemic, the study aims to provide a nuanced understanding of market dynamics in crisis situations, potentially guiding future strategies and policies.

In summary, this research endeavors to shed light on the complex interplay between investor sentiment and market responses in the face of an unprecedented global crisis, with a specific focus on the Saudi Arabian context. By delving into this relatively unexplored area, the study aspires to contribute valuable perspectives to the domain of financial market analysis, particularly in understanding how emerging markets respond to global upheavals.

2. Literature Review

2.1. Investor Sentiment and Market Dynamics in Crisis

Investor sentiment, a key concept in behavioral finance, refers to the overall attitude of investors towards market conditions. It encompasses the psychological and emotional factors influencing investor decisions, often deviating from the rationality assumed by traditional financial models. During periods of crisis, such as the COVID-19 pandemic, investor sentiment becomes particularly influential, affecting market dynamics in profound ways (Huynh et al., 2021). The pandemic presented an unprecedented crisis, leading to heightened uncertainty and fear among investors. Studies have shown that during such times, the market is more susceptible to sentiment-driven fluctuations (Buğan, 2021; Cevik et al., 2022; Sun et al., 2021). Investors tend to react not only to fundamental economic indicators but also to news, rumors, and the general mood of uncertainty. This reaction was evident in the initial phases of the pandemic, where global markets experienced significant volatility, largely attributed to the panic and pessimism among investors (Sun et al., 2021).

Behavioral biases, such as overreaction, herd behavior, and confirmation bias, were particularly pronounced during the pandemic (Loang, 2022). Investors, in the face of uncertainty and lack of precedent for such a crisis, often followed the crowd or overly reacted to negative news, exacerbating market volatility. Research focusing on these biases during COVID-19 has provided valuable insights into how investor sentiment can lead to deviations from expected market behavior based on traditional economic models. With the advent of technology, sentiment analysis has become an essential tool in understanding market dynamics. The use of big data analytics, machine learning algorithms, and natural language processing to analyze news, social media, and financial reports has enabled a more precise measurement of investor sentiment (Costola et al., 2023). During the COVID-19 crisis, these tools were instrumental in gauging the mood of the market, providing real-time insights into how investor sentiment was evolving and impacting stock prices. The correlation between investor sentiment and stock prices has been a focal point of research. Studies conducted during the pandemic have shown that markets with higher negative sentiment experienced larger declines and increased volatility (Baek et al., 2020; Basuony et al., 2022; Smales, 2021). This trend was particularly noticeable in sectors directly impacted by the pandemic, such as travel, hospitality, and retail. Conversely, sectors perceived as safe havens or beneficiaries of the pandemic conditions, like healthcare and technology, often saw less negative sentiment and, in some cases, positive returns. The efficient market hypothesis posits that stock prices reflect all available information. However, the role of investor sentiment, especially in times of crisis, challenges this assumption. The pandemic has reignited the debate on market efficiency, with studies suggesting that emotional reactions and irrational behaviors can lead to temporary market inefficiencies. Understanding these inefficiencies is crucial in emerging markets like Saudi Arabia, where investor sentiment may play an even more significant role due to the market's developing nature and regulatory environment (Alnori & Ahmad, 2022).

2.2.Impact of COVID-19 on Oil Prices and the Saudi Market

Saudi Arabia's economy is deeply intertwined with the global oil market, given its status as one of the world's largest oil producers. The oil sector not only contributes significantly to the country's GDP but also plays a pivotal role in shaping the financial market, particularly the stock market. Hence, understanding the impact of COVID-19 on oil prices is crucial to analyzing the corresponding responses of the Saudi stock market. The advent of COVID-19 brought about a dual shock to the global oil market: a supply glut and a demand slump. With travel restrictions and lockdowns implemented worldwide, the demand for oil plummeted, leading to a historic decline in oil prices (Algamdi et al., 2021). This period saw one of the most significant oil price drops in recent history, exacerbated by the initial inability of major oil-producing countries to agree on production cuts. The resulting oversupply further depressed prices, creating a challenging environment for oil-dependent economies (Bourghelle et al., 2021).

The Saudi stock market, heavily influenced by the oil sector, felt the immediate repercussions of the oil price crash (Hasanov et al., 2022). Key indices in the Saudi market, notably those representing petrochemical and energy sectors, showed significant declines following the drop in oil prices. This trend was reflective of the direct correlation between the health of the oil industry and the broader financial market in Saudi Arabia. In response to the oil crisis and the pandemic's broader economic impact, the Saudi government implemented a series of measures aimed at stabilizing the market and supporting the economy. These included fiscal stimuli, adjustments in oil production as part of OPEC+ agreements, and initiatives to support various economic sectors. The effectiveness of these measures has been a subject of interest in recent literature, with studies examining their impact on market confidence and recovery. The COVID-19 crisis underscored the vulnerabilities of an oil-dependent economy and highlighted the importance of economic diversification. Saudi Arabia’s Vision 2030, a strategic framework aimed at reducing the country’s dependence on oil, gained renewed focus during this period. The literature explores how the pandemic may have accelerated certain aspects of this diversification, particularly the shift towards digitalization and non-oil sectors, and its implications for the stock market (Al-Khalidi Al-Maliki, 2021).

The situation in Saudi Arabia provides a case study for understanding how oil-dependent emerging markets respond to global crises like COVID-19. Comparative analyses with other oil-rich nations offer insights into the resilience of such economies and the effectiveness of different strategies employed to mitigate the crisis's impact.

2.3. The Role of Institutional Investors in Saudi Market

Institutional investors, such as pension funds, mutual funds, insurance companies, and sovereign wealth funds, play a crucial role in the dynamics of the Saudi Arabian financial market. Their investment strategies and decisions significantly influence market trends and stability. Understanding their role is particularly important in assessing market responses to events like the COVID-19 pandemic, as institutional investors often behave differently from retail investors during times of market stress (Alsedrah & Hacine Gherbi, 2023). Before the pandemic, the Saudi stock market had

been witnessing a gradual increase in the participation of institutional investors. This shift was partly driven by the market's inclusion in major global indices and the government's initiatives to diversify the economy and attract foreign investment. These investors brought with them large capital inflows, professional investment management practices, and a different risk-return outlook compared to retail investors.

The outbreak of COVID-19 and the subsequent market volatility presented a critical test for institutional investors in Saudi Arabia. Initial reactions varied, with some opting for a cautious approach, reducing exposure to high-risk assets, while others sought to capitalize on market dips. The strategies employed by these investors during this period provide insights into their risk assessment and management in the face of unprecedented uncertainty. Institutional investors are often considered stabilizers in financial markets due to their long-term investment horizons and substantial capital bases. During the pandemic, their actions in the Saudi market had a considerable impact on market stability and recovery. Studies examining trading patterns, portfolio adjustments, and asset allocation decisions of institutional investors can reveal how their presence either mitigated or exacerbated market volatility during the crisis (Abuzayed & Al-Fayoumi, 2021; Anggraini et al., 2022).

The role of institutional investors in enhancing market efficiency is a topic of significant interest. With their access to extensive research, sophisticated investment tools, and experienced management, these investors are presumed to make more informed and rational investment decisions. Analyzing their behavior during the pandemic can provide insights into how efficiently the Saudi market processed information and adjusted to the new economic reality. A comparative analysis of the behavior of institutional investors in Saudi Arabia with their counterparts in other markets can offer a broader perspective. It can highlight unique characteristics of the Saudi market, such as regulatory environments, market structure, and economic dependencies, and how these factors influenced institutional investment strategies during the pandemic (Boshnak et al., 2023).

2.4. Socioeconomic Factors and Market Recovery

The recovery of financial markets from the shocks of the COVID-19 pandemic cannot be viewed in isolation from the broader socioeconomic context. In Saudi Arabia, various socioeconomic factors played a pivotal role in shaping the market's resilience and recovery trajectory. These factors include government policies, public health responses, economic diversification efforts, and societal changes, all of which interacted with market dynamics during and after the pandemic. The Saudi government's response to the pandemic was multi-faceted, encompassing both public health initiatives and economic stimulus measures (Alharbi, 2021). Fiscal policies, including stimulus packages aimed at supporting businesses and individuals, were critical in mitigating the economic impact of the pandemic. Monetary policies, such as interest rate cuts and liquidity support to banks, also played a role in sustaining economic activity. The effectiveness of these policies in stabilizing the stock market and fostering a conducive environment for recovery has been a subject of significant interest in recent literature. Public health measures, including lockdowns, travel restrictions, and vaccination campaigns, directly impacted economic activities and

investor sentiment. The speed and effectiveness of these measures influenced investor confidence, as they were indicative of the government's ability to manage the crisis. In Saudi Arabia, the government's proactive approach to managing the health crisis had a stabilizing effect on the market, as it reduced uncertainty and laid the groundwork for economic recovery (Havrlant et al., 2021).

Saudi Arabia's ongoing efforts to diversify its economy, as part of Vision 2030, gained added relevance during the pandemic. The reduced dependence on oil and the focus on developing non-oil sectors, such as tourism, entertainment, and technology, were seen as key to building a more resilient economy. This diversification strategy impacted the stock market's recovery, as sectors other than oil began to play a more significant role in driving market growth. Societal changes, including the increasing digitalization of everyday life and changes in consumer behavior, also influenced the stock market (Jan et al., 2021). The pandemic accelerated the adoption of digital technologies, leading to increased retail investor participation in the stock market through online trading platforms. Additionally, shifts in consumer behavior, such as increased reliance on e-commerce and digital services, affected the performance of various sectors in the stock market. The global economic context, including international oil prices, global supply chain disruptions, and the economic health of major trade partners, also influenced the Saudi market's recovery. As a key player in the global oil market and an integral part of the international economic system, Saudi Arabia's financial market was affected by these global trends, underscoring the interconnectedness of the global economy.

2.5. Existing Literature Evaluation

While extensive research has explored the impact of investor sentiment on market dynamics during crises, most studies have focused on developed economies. For example, Buğan (2021), Cevik et al. (2022), and Sun et al. (2021) analyze sentiment-driven fluctuations in Western markets, highlighting how fear and uncertainty can exacerbate market volatility. However, these studies often overlook the distinct characteristics of emerging markets, where different economic structures and investor behaviors can lead to unique market responses. A notable gap in the literature is the limited examination of how emerging markets, particularly those in the Middle East, respond to global crises like the COVID-19 pandemic. While developed markets benefit from robust financial systems and regulatory frameworks, emerging markets like Saudi Arabia may be more vulnerable to sentiment-driven shocks due to factors such as higher market volatility, less diversified economies, and a significant influence of government policies on market dynamics (Alnori & Ahmad, 2022). This gap is critical, as understanding these differences can provide more targeted insights into crisis management and policy responses for such economies.

Furthermore, existing studies on Saudi Arabia's market have primarily focused on macroeconomic indicators and oil price fluctuations (Algamdi et al., 2021; Hasanov et al., 2022), with limited attention to the role of investor sentiment in driving market behavior. This research aims to fill this gap by integrating behavioral finance theories with empirical data to examine how investor sentiment, influenced by both local and global factors, impacted the Saudi stock market during the pandemic. By doing so, this

study contributes to a more comprehensive understanding of market dynamics in emerging economies during global crises.

The use of big data analytics, machine learning algorithms, and natural language processing to analyze news, social media, and financial reports has enabled a more precise measurement of investor sentiment (Costola et al., 2023). During the COVID-19 crisis, these tools were instrumental in gauging the mood of the market, providing real-time insights into how investor sentiment was evolving and impacting stock prices. The correlation between investor sentiment and stock prices has been a focal point of research. Studies conducted during the pandemic have shown that markets with higher negative sentiment experienced larger declines and increased volatility (Baek et al., 2020; Basuony et al., 2022; Smales, 2021). This trend was particularly noticeable in sectors directly impacted by the pandemic, such as travel, hospitality, and retail. Conversely, sectors perceived as safe havens or beneficiaries of the pandemic conditions, like healthcare and technology, often saw less negative sentiment and, in some cases, positive returns.

3. Research Questions

The central aim of this study is to unravel the complexities of investor sentiment and stock market responses in Saudi Arabia during the COVID-19 pandemic. This exploration is situated within a broader context of understanding how global crises impact emerging markets, particularly those with unique economic structures like Saudi Arabia. To guide this investigation, the following research questions have been formulated:

Q1 – "How did the Tadawul All Share Index (TASI) perform in comparison to major global indices (e.g., NASDAQ, Dow Jones, DAX) during the COVID-19 pandemic in terms of stock price movements and volatility?"

This question will be addressed through a comparative analysis of stock price trends and volatility measures across the selected indices using descriptive statistics and volatility modeling.

"What impact did the COVID-19 pandemic have on trading volumes in the Saudi stock market relative to key developed markets, and how did this influence market activity levels?"

Q3 – "What impact did the COVID-19 pandemic have on trading volumes in the Saudi stock market relative to key developed markets, and how did this influence market activity levels?"

This question will focus on analyzing trading volume data to assess changes in market activity, using volume trend analysis and comparison with global indices.

Q4 – "What was the degree of interconnectedness between the Saudi stock market and major global indices during the pandemic, and how did these relationships evolve over time?"

This question will be explored through correlation analysis, examining the relationships between TASI and global indices over different phases of the pandemic.

Q5 – "To what extent did the Saudi stock market's response to the pandemic differ from other markets, and what were the key factors influencing its relative resilience or vulnerability?"

This question will involve a comparative analysis of TASI's performance against other markets, identifying unique factors such as government interventions or economic policies that influenced its response.

3.1.Significance of the Research Questions

These questions are designed to provide a comprehensive understanding of the multifaceted impacts of the COVID-19 pandemic on the Saudi stock market. The answers to these questions will contribute to academic knowledge in the fields of finance and economics, particularly in understanding market behavior during crises. Moreover, they hold practical relevance for investors, policymakers, and financial analysts, offering insights that could guide future decision-making in similar crisis situations.

4. Methodology

In this study, we have structured the research methodology to detail the processes and analytical techniques used, including comparative analysis, correlation analysis, and volatility measurement, to comprehensively assess the impact of COVID-19 on the Saudi stock market in relation to global indices. Data were collected from various sources, including stock prices and historical stock market volumes obtained from APIs such as Yahoo® Finance and Investing.com. These platforms, known for their comprehensive and accurate financial data, ensured the reliability of the study. The focus was on several pivotal stock indices that represent both developed markets and the Saudi Arabian market. These included the Tadawul All Shares Index (TASI), NASDAQ Composite (IXIC), Dow Jones Industrial Average (DJI), DAX Performance-Index (GDAXI), CAC 40 (FCHI), and S&P 500 (GSPC). The timeframe of the study spanned from the onset of the COVID-19 outbreak in January 2020 to the present, allowing for an in-depth analysis of market responses throughout the pandemic.

For data analysis, IBM® SPSS Statistics Software was utilized for its proficiency in descriptive analysis and capability to handle complex datasets. The analysis included examining volume trends to gauge market activity levels, assessing stock price movements for patterns and significant changes, and calculating the volatility of each index using statistical measures like standard deviation. A comparative analysis was conducted to contrast the performance of the Tadawul All Shares Index with other global indices, providing insights into how the Saudi market fared compared to major developed markets. Additionally, correlation analysis was employed to determine the interconnectedness of global market trends across these indices.

The study adhered to ethical considerations of data integrity and transparency in methodology and analytical processes. It also acknowledged limitations related to data availability and the constraints of the analytical tools and techniques used, especially in interpreting complex market dynamics. This methodology aimed to lay a solid foundation for a comprehensive and accurate analysis of stock market performances

during the COVID-19 pandemic, with a specific focus on the comparison of the Saudi Arabian market to key global indices.

5. Data Analysis and Discussion

The study utilizes daily stock prices and trading volumes from Yahoo® Finance and Investing.com for key indices such as TASI, NASDAQ, Dow Jones, DAX, CAC 40, and S&P 500, covering the period from January 2020 to November 2023, with key variables including price movements, trading volumes, and volatility metrics.

The selected stock indices represent both the Saudi market (Tadawul All Shares Index) and major global markets (NASDAQ, Dow Jones, DAX, CAC 40, and S&P 500) to provide a balanced comparison between emerging and developed economies. These indices were chosen due to their significance in capturing market dynamics and investor behavior globally, allowing for a comprehensive analysis of the pandemic's impact on different economic environments and market structures.

The following Figure 1 shows the historical stock market volumes (a total of 204 observations) for the Tadawul All Shares Index (TASI), as measured in millions of Saudi Riyals (SAR), from January 2020 to the present, and covers the period of the COVID-19 pandemic.

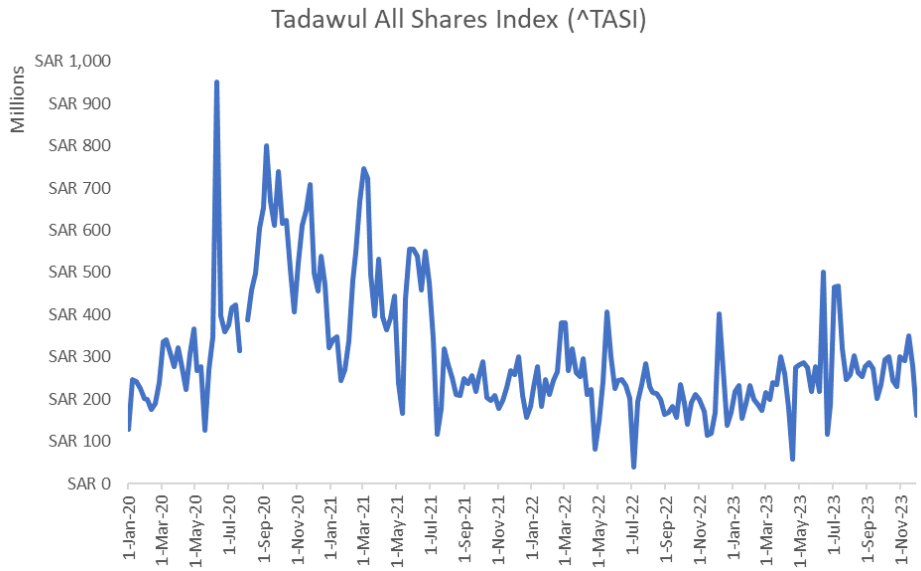

Figure 1- Stock market volumes for the Tadawul All Shares Index (TASI)

When investigating the TASI Stock market volumes, the following points can be considered:

- **Initial Volatility**: At the beginning of the pandemic, markets around the world experienced significant volatility. This would likely be reflected in the TASI volumes as investors responded to the uncertainty and rapid developments of the COVID-19 situation.
- **Government Response**: The Saudi government's measures in response to the pandemic would have had an impact on investor sentiment. Initiatives such as

economic stimulus, public health measures, and adjustments to oil production in response to changing global demand would influence trading activity.

- **Global Market Influence**: As a member of the global economy, the Saudi market would also react to international events, including the responses of other countries to the pandemic, global economic slowdowns, and the progress of vaccine development and deployment.
- **Recovery Phases**: The fluctuating volumes might reflect different phases of the pandemic, such as initial lockdowns, the gradual reopening of economies, and the ongoing management of the pandemic's impact. Peaks in trading volume could correspond to optimism about vaccine rollouts or reactions to new variants and waves of infections.
- **Stabilization**: In more recent times, if the trading volumes show less fluctuation, it could suggest that the market has begun to stabilize as the situation with the pandemic improves, or it could indicate that investors have adjusted to the "new normal" and market reactions to pandemic news have become more muted.

Economic Diversification Efforts: Saudi Arabia's Vision 2030 and its related economic diversification efforts may also affect investor sentiment, as these long-term plans aim to reduce the country's dependence on oil and develop other sectors.

Table 1 - Descriptive Statistics for TASI index along with foreign developed stock market indices

	N	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Tadawul All Shares Index (^TASI	204	38933001	950572233	308573290.99	10649811.877	152109738.590	23137372573932500.000
CAC 40 (^FCHI)	202	82160100	1442151700	384968591.58	12153974.120	172740428.264	29839255556916000.000
Dow Jones Industrial Average (^	205	511660000	4111260000	1740883268.29	32328643.459	462875732.259	214253943514266000.000
DAX PERFORMANCE-INDEX (^GDAXI)	205	139192500	1455381800	384754325.37	11419408.534	163501048.039	26732592709763300.000
NASDAQ Composite (^IXIC)	205	734870000	4111260000	1738594829.27	32344283.308	463099660.826	214461295857446000.000
S&P 500 (^GSPC)	205	9818060000	40783880000	21655847414.63	342862468.946	4909043479.687	24098707885453600000.000

The trading volume analysis of the Tadawul All Share Index (TASI) in comparison to other major global indices reveals several key insights into its market activity. Notably, TASI's minimum trading volume is substantially lower than that of prominent U.S. indices such as the Dow Jones and NASDAQ. This suggests that on days with the lowest volume, TASI is less active than these larger U.S. markets. Furthermore, while TASI's maximum trading volume doesn't reach the peak levels seen in the U.S. markets, it surpasses that of European indices like the CAC 40 and DAX, indicating a capacity for relatively high activity.

In terms of average trading volume, TASI's mean is lower than all other considered indices, reflecting its status as a smaller market not only in comparison to the major U.S. markets but also relative to other international indices such as the CAC 40 and DAX. Moreover, the standard deviation of TASI's trading volume is lower than that of the larger indices, indicating less variability in its trading volume and suggesting a more stable trading activity. This stability is further confirmed by the variance of TASI, which is the square of the standard deviation. The lower variance in TASI’s trading volume compared to the larger indices signifies that its volume fluctuations are less extreme.

Additionally, TASI's smaller standard error, in relation to the other indices, provides an indication of the accuracy of the mean trading volume. A smaller standard error implies that TASI's sample mean is a more accurate representation of the true population mean, reinforcing the observation of its relatively stable market activity.

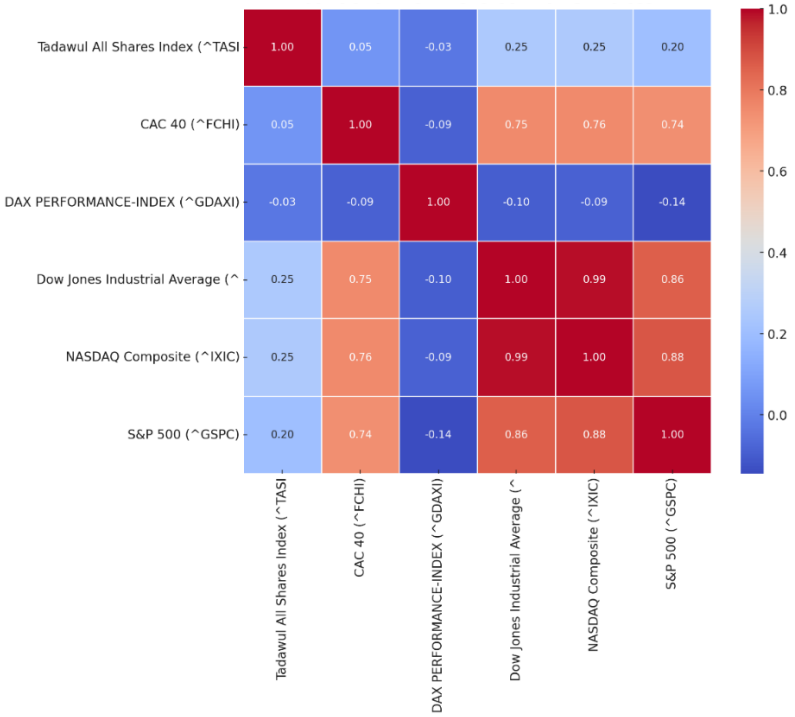

Figure 2 *- Correlation matrix of stock market indices*

The correlation matrix in Figure 2 provides insight into how the TASI index's movements were related to other major global indices during the pandemic. The TASI index, representing the Saudi stock market, demonstrates a low to moderate positive correlation with major global indices such as the Dow Jones, NASDAQ, and S&P 500, with correlation coefficients ranging approximately between 0.20 to 0.25. This level of correlation suggests that while there is a certain degree of association between TASI's movements and these global indices, the connection is not particularly strong. In contrast, indices like the Dow Jones, NASDAQ, and S&P 500 exhibit very high positive correlations among themselves, reflecting their close linkage. This high correlation is predictable given that these indices all represent the U.S. market and are subject to similar economic influences.

The relatively lower correlation of TASI with other global indices could reflect unique market dynamics or factors that specifically influence the Saudi stock market. This might include local investor sentiments, regional economic conditions, and government initiatives that are unique to Saudi Arabia. These distinct elements could contribute to the TASI index following a different trajectory compared to the tightly interwoven movements of major U.S. indices, highlighting the distinctive characteristics of the Saudi market in the global financial landscape.

The market stability observed in the TASI index during the COVID-19 pandemic, as indicated by the lower trading volume variability and lower volatility compared to larger global indices, can be linked to several factors related to investor sentiment and government initiatives in the Kingdom of Saudi Arabia (KSA).

5.1. Investor Sentiment

Investor sentiment in the Kingdom of Saudi Arabia (KSA) during the COVID-19 pandemic appears to have been shaped by a blend of factors including regional stability, the government's communicative approach, and proactive measures to protect the economy. The confidence of Saudi investors in their local market likely stemmed from the perceived robustness and resilience of the Saudi economy, significantly supported by its substantial oil revenues. This confidence might have been bolstered by the KSA's economic leadership within the Gulf region, where its market stability could be seen as part of a broader regional trend of implementing economic measures designed to sustain financial stability. Additionally, the way the Saudi government communicated about the pandemic and its economic repercussions likely played a crucial role. The government's approach, perceived as transparent and comprehensive, may have been instrumental in maintaining investor confidence. Such transparent communication, coupled with the country's economic strength and regional leadership, likely contributed to positive investor sentiment in the KSA during this challenging period (Wasiuzzaman, 2022).

5.2. Governmental Measures and Initiatives

In response to the COVID-19 pandemic, the Saudi government deployed a multifaceted strategy to lessen the economic repercussions, focusing on areas such as economic stimulus, monetary policies, public health, and oil price stabilization (Jan et al., 2021). Key among these measures was the introduction of stimulus packages aimed at bolstering businesses, especially small and medium-sized enterprises (SMEs). Through financial aid and loans, these stimulus efforts played a pivotal role in shielding the stock market from a major downturn. Concurrently, the Saudi Arabian Monetary Authority (SAMA) implemented policies to ensure liquidity in the financial system, a move that likely bolstered market stability.

Complementing these financial strategies were the government's proactive and stringent public health measures. By effectively controlling the spread of the pandemic, these measures contributed significantly to maintaining economic stability. Another critical area of focus was the oil sector, a cornerstone of the Saudi economy. As a prominent member of OPEC, the Kingdom of Saudi Arabia (KSA) was instrumental in stabilizing oil prices during the pandemic-induced market shocks. This action was crucial in maintaining the overall economic stability of a country heavily reliant on its oil sector. Collectively, these diverse yet interlinked initiatives by the Saudi government showcased a comprehensive approach to navigating the economic challenges posed by the global health crisis.

The combination of these factors likely resulted in a more contained and stable investor response in the KSA, reflected in the trading volumes and volatility of the TASI index (Parveen, 2020). By supporting the financial markets and the economy, these initiatives may have mitigated the level of uncertainty and fear that typically leads to market volatility, thereby upholding investor confidence and contributing to the overall stability of the stock market during a period of global upheaval.

6. Findings and Implications

This study provides valuable insights that are significant for investors, policymakers, and the broader Saudi economy. The findings of this study have several implications:

6.1. For Investors

- Risk Assessment: The study identifies the distinct behavior of the Saudi stock market during the pandemic, emphasizing the importance of understanding TASI's correlation with global indices in both stable and volatile conditions. Similar findings were reported by Al-Awadhi et al. (2020), who highlighted the benefits of diversification in reducing risk during the pandemic. Conversely, Baker et al. (2020) suggested that even diversified portfolios remained vulnerable to abrupt shifts due to global uncertainty, indicating the need for additional hedging techniques. Investors are advised to implement risk management strategies such as diversifying their portfolios across sectors and regions, using hedging techniques, and setting up stop-loss mechanisms to safeguard against abrupt market shifts. These measures can help mitigate exposure to volatility and enhance decision-making in uncertain times.
- Investment Strategies: Investors can use insights from the study to fine-tune their investment strategies, especially in sectors that showed relative stability or growth during the pandemic. For instance, the resilience of the technology and healthcare sectors, as highlighted by Mazur et al. (2021), can guide targeted investments. On the other hand, sectors heavily impacted by COVID-19 restrictions, such as tourism and hospitality, were less favorable, as noted by Zhang et al. (2020). Knowledge about sectors influenced by government actions or local market confidence can guide more targeted investments.

6.2. For Policymakers

- Economic Resilience: The study underscores the effectiveness of the measures taken by the Saudi government to stabilize the market and economy during the pandemic. This is consistent with findings from Shen et al. (2020), who noted the importance of timely government interventions in mitigating economic downturns. However, Wang et al. (2022) argue that such measures may only offer temporary relief without structural economic reforms, suggesting a need for long-term strategies. This can guide future policy decisions, particularly in handling economic crises and ensuring market stability.
- Investor Confidence: Policymakers can use these findings to understand what factors contribute most to investor confidence, such as transparency in communication and robust economic measures, and continue to strengthen these

areas in their future approaches. Godley et al. (2007) found that clear government communication during crises enhances investor confidence, while contradictory policies can lead to market distrust.

- Economic Diversification: The study's findings on sectors that outperformed or underperformed can inform ongoing economic diversification efforts under Vision 2030, emphasizing the development of sectors that show potential for growth and stability. This aligns with the conclusions of Hvidt (2013), who emphasized the need for economic diversification in the Gulf states. Conversely, Hertog (2010) warned that overreliance on oil revenue could hinder such efforts, indicating that a balanced approach is necessary.

6.3. For the Saudi Economy:

- Global Integration: The degree of correlation with global markets indicates the extent of Saudi Arabia's economic integration with the world economy. This can have implications for the country's economic policies, especially in terms of international trade and foreign investment. Zhao et al. (2023) found that higher integration can lead to increased foreign investment, while Gokmenoglu et al. (2015) suggested that it could also expose the economy to global financial shocks.
- Sectoral Growth and Stability: The study provides insights into which sectors were most affected by the pandemic and which held stable, helping to identify areas for potential economic growth and investment. This supports the findings of Albulescu (2020), who noted that sectors with strong government support fared better during the pandemic. In contrast, Goodell (2020) argued that long-term sectoral stability requires more than just short-term government interventions.
- Crisis Management: Understanding the impact of various government measures on the stock market and the economy can enhance crisis management strategies in future scenarios, helping to safeguard the economy against external shocks. Similar conclusions were drawn by Ozili and Arun (2020), who highlighted the role of government policies in mitigating the economic impact of COVID-19. However, they also noted that overly restrictive measures could stifle economic recovery.

Overall, the study offers a comprehensive view of how the Saudi stock market and investor sentiment responded to the COVID-19 pandemic, providing valuable lessons and insights for various stakeholders in shaping future economic and investment landscapes in Saudi Arabia.

7. Limitations

This study, while comprehensive in its scope, encounters several limitations that must be acknowledged. These limitations stem primarily from data constraints and methodological challenges.

- **Data Availability and Accessibility:**

The study relies heavily on publicly available data from financial databases and APIs like Yahoo Finance and Investing.com. While these sources are reputable, they may not encompass all relevant market data, potentially limiting the breadth of analysis. The study's focus on specific indices, primarily the TASI and other major global indices, means that certain market segments or alternative investment vehicles may have been overlooked, possibly affecting the comprehensiveness of market insights.

- **Time Frame Constraints:**

The study is limited to the period from January 2020 to November 2023, encompassing the COVID-19 pandemic. While this period is crucial, it may not provide a long enough historical context to fully understand market trends and investor behaviors in the pre-pandemic era.

- **Methodological Challenges:**

The use of statistical tools like IBM SPSS for data analysis, while robust, may have its limitations in capturing the nuances of market sentiment and investor psychology, which often require more qualitative approaches. The study's reliance on quantitative data may not fully account for qualitative factors such as investor sentiment shifts driven by non-economic events or geopolitical developments.

- **Market Specificity:**

The Saudi stock market has unique characteristics influenced by local economic policies, regional stability, and the significant impact of the oil sector. While these specifics provide valuable insights, they also mean that findings may not be generalizable to other markets or regions.

- **External Factors:**

Global economic conditions, such as the pandemic and oil price fluctuations, are external variables that significantly impact market behavior. The study might not fully account for all such external factors or their interplay, which can be complex and multifaceted.

- **Standard Error Considerations:**

The standard error measurements used to estimate the accuracy of the mean trading volumes provide a statistical estimate but may not always reflect the true variability in the market.

By acknowledging these limitations, the study ensures a balanced and realistic interpretation of its findings, providing a grounded basis for future research and analysis in similar domains.

8. Conclusion

The study **titled** "Investor Sentiment and Stock Market Responses to COVID-19 in Saudi Arabia" has made significant contributions to the understanding of the complex dynamics of the Saudi stock market during an unprecedented global crisis. It provided valuable insights into the factors that influenced investor sentiment in the Kingdom of Saudi Arabia, such as local market confidence, regional geopolitical stability, and the transparency of governmental communication. Particularly noteworthy was the resilience of the Saudi market, bolstered by the country's substantial oil revenues and its economic leadership in the Gulf region. The analysis of the Tadawul All Share Index (TASI) relative to major global indices revealed distinctive market dynamics, showing a moderate correlation with global markets while exhibiting unique patterns that reflect Saudi Arabia's specific economic and policy context. The study highlighted the effective role of various government measures, including targeted economic stimulus packages, strategic monetary policies by the Saudi Arabian Monetary Authority (SAMA), proactive public health interventions, and efforts in oil price stabilization, in mitigating market volatility during the pandemic.

Looking ahead, the study paves the way for future research in several key areas. An extension of the study's timeframe to include pre-pandemic data would offer a more comprehensive understanding of long-term market trends. Broadening the scope to include additional sectors and alternative investment vehicles, such as real estate and sovereign bonds, could provide a more nuanced view of the Saudi financial landscape. The incorporation of qualitative research methods would deepen the understanding of investor psychology and sentiment, especially during times of crisis. Further engagement with technological advancements, such as digital trading platforms and fintech solutions, and their specific impact on market efficiency and investor behavior, would offer valuable insights into the evolving financial ecosystem. Additionally, exploring the influence of geopolitical developments on investor behavior could further elucidate the complexities of the market. Expanding the analysis to include comparisons with other emerging markets would also be crucial in understanding the diverse responses to global crises and identifying common factors that contribute to resilience or vulnerability. Finally, comparative studies with other oil-dependent economies or emerging markets could yield broader insights into varying economic responses to global crises. Overall, this study significantly enhances our understanding of financial market behavior during periods of global disruption and opens new avenues for future research in the context of emerging economies like Saudi Arabia.

References

Abuzayed, B., & Al-Fayoumi, N. (2021). Risk spillover from crude oil prices to GCC stock market returns: New evidence during the COVID-19 outbreak. The North American Journal of Economics and Finance, 58, 101476. https://doi.org/10.1016/j.najef.2021.101476

Al-Awadhi, A.M., Alsaifi, K., Al-Awadhi, A., Alhammadi, S., 2020. Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns. J. Behav. Exp. Finance 27, 100326. https://doi.org/10.1016/j.jbef.2020.100326

Alber, N., & Dabour, M. (2020). The Dynamic Relationship between FinTech and Social Distancing under COVID-19 Pandemic: Digital Payments Evidence (SSRN Scholarly Paper 3717282). https://papers.ssrn.com/abstract=3717282

Albulescu, C.T., 2021. COVID-19 and the United States financial markets' volatility. Finance Res. Lett. 38, 101699. https://doi.org/10.1016/j.frl.2020.101699

Algamdi, A., Brika, S. K. M., Musa, A., & Chergui, K. (2021). COVID-19 Deaths Cases Impact on Oil Prices: Probable Scenarios on Saudi Arabia Economy. Frontiers in Public Health, 9. https://www.frontiersin.org/articles/10.3389/fpubh.2021.620875

Alharbi, R. (2021). Impact of COVID-19 on Saudi Arabia's economy: Evidence from macro-micro modelling. PSU Research Review, ahead-of-print(ahead-of-print). https://doi.org/10.1108/PRR-08-2021-0039

Al-Jehani, N. B., Hawsawi, Z. A., Radwan, N., & Farouk, M. (2021). DEVELOPMENT OF ARTIFICIAL INTELLIGENCE TECHNIQUES IN SAUDI ARABIA: THE IMPACT ON COVID-19 PANDEMIC. LITERATURE REVIEW. Journal of Engineering Science and Technology, 4530–4547.

Al-Khalidi Al-Maliki, S. Q. (2021). Increasing non-oil revenue potentiality through digital commerce: The case study in KSA. Journal of Money and Business, 1(2), 65–83. https://doi.org/10.1108/JMB-07-2021-0022

AL-Najjar, D. (٢٠٢٢/٠٥/٢٠). Impact of the twin pandemics: COVID-19 and oil crash on Saudi exchange index. PLOS ONE, 17(5), e0268733. https://doi.org/10.1371/journal.pone.0268733

Alnori, F., & Ahmad, M. U. (2022). Herd Mentality Amongst Equity Investors During COVID-19: Evidences from Saudi Arabia. International Journal of Economics and Financial Issues, 12(4), Article 4. https://doi.org/10.32479/ijefi.13192

Alsedrah, I. T., & Hacine Gherbi, E. A. (2023). RETRACTED ARTICLE: Impact of COVID-19 pandemic on total market trade value (institutional investors vs non-institutional investors). Journal of Sustainable Finance & Investment, 13(1), 353–365. https://doi.org/10.1080/20430795.2021.1905412

Alsunaidi, S. J., Almuhaideb, A. M., Ibrahim, N. M., Shaikh, F. S., Alqudaihi, K. S., Alhaidari, F. A., Khan, I. U., Aslam, N., & Alshahrani, M. S. (2021). Applications of Big Data Analytics to Control COVID-19 Pandemic. Sensors, 21(7), Article 7. https://doi.org/10.3390/s21072282

Alzyadat, J. A., & Asfoura, E. (2021). The Effect of COVID-19 Pandemic on Stock Market: An Empirical Study in Saudi Arabia. The Journal of Asian Finance, Economics and Business, 8(5), 913–921. https://doi.org/10.13106/jafeb.2021.vol8.no5.0913

Anggraini, P. G., Utami, E. R., & Wulandari, E. (2022). What happens to the stock market during the COVID-19 pandemic? A systematic literature review. Pacific Accounting Review, 34(3), 406–425. https://doi.org/10.1108/PAR-11-2021-0184

Ashraf, B. N. (2020). Economic impact of government interventions during the COVID-19 pandemic: International evidence from financial markets. Journal of Behavioral and Experimental Finance, 27, 100371. https://doi.org/10.1016/j.jbef.2020.100371

Baek, S., Mohanty, S. K., & Glambosky, M. (2020). COVID-19 and stock market volatility: An industry level analysis. Finance Research Letters, 37, 101748. https://doi.org/10.1016/j.frl.2020.101748

Baker, S.R., Bloom, N., Davis, S.J., Terry, S.J., 2020. COVID-Induced Economic Uncertainty. Working Paper Series. https://doi.org/10.3386/w26983

Basuony, M. A. K., Bouaddi, M., Ali, H., & EmadEldeen, R. (2022). The effect of COVID-19 pandemic on global stock markets: Return, volatility, and bad state probability dynamics. Journal of Public Affairs, 22(S1), e2761. https://doi.org/10.1002/pa.2761

Boshnak, H. A., Alsharif, M., & Alharthi, M. (2023). Corporate governance mechanisms and firm performance in Saudi Arabia before and during the COVID-19 outbreak. Cogent Business & Management, 10(1), 2195990. https://doi.org/10.1080/23311975.2023.2195990

Bourghelle, D., Jawadi, F., & Rozin, P. (2021). Oil price volatility in the context of Covid-19. International Economics, 167, 39–49. https://doi.org/10.1016/j.inteco.2021.05.001

Buğan, M. F. (2021). Covid-19, Investor Sentiment and Contagion Across Stock Markets. Uluslararası Ekonomi ve Yenilik Dergisi, 7(1), Article 1. https://doi.org/10.20979/ueyd.874254

Cevik, E., Kirci Altinkeski, B., Cevik, E. I., & Dibooglu, S. (2022). Investor sentiments and stock markets during the COVID-19 pandemic. Financial Innovation, 8(1), 69. https://doi.org/10.1186/s40854-022-00375-0

Costola, M., Hinz, O., Nofer, M., & Pelizzon, L. (2023). Machine learning sentiment analysis, COVID-19 news and stock market reactions. Research in International Business and Finance, 64, 101881. https://doi.org/10.1016/j.ribaf.2023.101881

Dash, S. R., & Maitra, D. (2022). The COVID-19 pandemic uncertainty, investor sentiment, and global equity markets: Evidence from the time-frequency co-movements. The North American Journal of Economics and Finance, 62, 101712. https://doi.org/10.1016/j.najef.2022.101712

Ganichev, N. A., & Koshovets, O. B. (2021). Forcing the Digital Economy: How will the Structure of Digital Markets Change as a Result of the COVID-19 Pandemic. Studies on Russian Economic Development, 32(1), 11–22. https://doi.org/10.1134/S1075700721010056

Goel, G., & Dash, S. R. (2021). Investor sentiment and government policy interventions: Evidence from COVID-19 spread. Journal of Financial Economic Policy, 14(2), 242–267. https://doi.org/10.1108/JFEP-02-2021-0038

Godley, W., Lavoie, M., 2007. Fiscal Policy in a Stock-Flow Consistent (SFC) Model. J. Post Keynes. Econ. 30, 79–100.

Gokmenoglu, K.K., Amin, M.Y., Taspinar, N., 2015. The Relationship among International Trade, Financial Development and Economic Growth: The Case of Pakistan. Procedia Econ. Finance, 16th Annual Conference on Finance and Accounting, ACFA Prague 2015, 29th May 2015 25, 489–496. https://doi.org/10.1016/S2212-5671(15)00761-3

Goodell, J.W., 2020. COVID-19 and finance: Agendas for future research. Finance Res. Lett. 35, 101512. https://doi.org/10.1016/j.frl.2020.101512

Hasanov, F. J., Javid, M., & Joutz, F. L. (2022). Saudi Non-Oil Exports before and after COVID-19: Historical Impacts of Determinants and Scenario Analysis. Sustainability, 14(4), Article 4. https://doi.org/10.3390/su14042379

Havrlant, D., Darandary, A., & Muhsen, A. (2021). Early estimates of the impact of the COVID-19 pandemic on GDP: A case study of Saudi Arabia. Applied Economics, 53(12), 1317–1325. https://doi.org/10.1080/00036846.2020.1828809

Hertog, S., 2010. The Sociology of the Gulf Rentier Systems: Societies of Intermediaries. Comp. Stud. Soc. Hist. 52, 282–318.

Huynh, T. L. D., Foglia, M., Nasir, M. A., & Angelini, E. (2021). Feverish sentiment and global equity markets during the COVID-19 pandemic. Journal of Economic Behavior & Organization, 188, 1088–1108. https://doi.org/10.1016/j.jebo.2021.06.016

Hvidt, M., 2013. Economic diversification in GCC countries: past record and future trends. LSE Res. Online Doc. Econ., LSE Research Online Documents on Economics.

Jan, M., Rizwan, Y. C., & Brahimi, T. (2021). COVID-19 IMPACT ON THE ECONOMY OF SAUDI ARABIA. PalArch's Journal of Archaeology of Egypt / Egyptology, 18(13), Article 13.

Kanapickienė, R., Teresienė, D., Budrienė, D., Keliuotytė-Staniulėnienė, G., & Kartašova, J. (2020). The impact of COVID-19 on European financial markets and economic sentiment. Economy & Business, 14, 144–163.

Loang, O. K. (2022). Overreaction, Investor Sentiment and Market Sentiment of COVID-19. Vision, 09722629221087386. https://doi.org/10.1177/09722629221087386

Najaf, K., & Chin, A. (2024). The impact of the China stock market on global financial markets during COVID-19. International Journal of Public Sector

Performance Management, 13(1), 100–114. https://doi.org/10.1504/IJPSPM.2024.135823

Naz, F., Karim, S., Houcine, A., & Naeem, M. A. (2022). Fintech Growth during COVID-19 in MENA Region: Current Challenges and Future prospects. Electronic Commerce Research. https://doi.org/10.1007/s10660-022-09583-3

Ngwakwe, C. C. (2020). Effect of COVID-19 Pandemic on Global Stock Market Values: A Differential Analysis. Acta Universitatis Danubius. Œconomica, 16(2), 255–269.

Mazur, M., Dang, M., Vega, M., 2021. COVID-19 and the march 2020 stock market crash. Evidence from S&P1500. Finance Res. Lett. 38, 101690. https://doi.org/10.1016/j.frl.2020.101690

Ozili, P.K., Arun, T., 2020. Spillover of COVID-19: Impact on the Global Economy. https://doi.org/10.2139/ssrn.3562570

Pak, A., Adegboye, O. A., Adekunle, A. I., Rahman, K. M., McBryde, E. S., & Eisen, D. P. (2020). Economic Consequences of the COVID-19 Outbreak: The Need for Epidemic Preparedness. Frontiers in Public Health, 8. https://www.frontiersin.org/articles/10.3389/fpubh.2020.00241

Parveen, M. (2020). Challenges Faced by Pandemic Covid 19 Crisis: A Case Study in Saudi Arabia. Challenge, 63(6), 349–364. https://doi.org/10.1080/05775132.2020.1822659

Qiu, L., & Welch, I. (2004). Investor Sentiment Measures (Working Paper 10794). National Bureau of Economic Research. https://doi.org/10.3386/w10794

Samontaray, D., Nugali, S., & Sasidhar, B. (2014). A Study of the Effect of Macroeconomic Variables on Stock Market: Saudi Perspective. International Journal of Financial Research, 5. https://doi.org/10.5430/ijfr.v5n4p120

Shen, H., Fu, M., Pan, H., Yu, Z., Chen, Y., 2020. The Impact of the COVID-19 Pandemic on Firm Performance. Emerg. Mark. Finance Trade 56, 2213–2230. https://doi.org/10.1080/1540496X.2020.1785863

Smales, L. A. (2021). Investor attention and global market returns during the COVID-19 crisis. International Review of Financial Analysis, 73, 101616. https://doi.org/10.1016/j.irfa.2020.101616

Sun, Y., Bao, Q., & Lu, Z. (2021). Coronavirus (Covid-19) outbreak, investor sentiment, and medical portfolio: Evidence from China, Hong Kong, Korea, Japan, and U.S. Pacific-Basin Finance Journal, 65, 101463. https://doi.org/10.1016/j.pacfin.2020.101463

Wang, Q., Yang, X., Li, R., 2022. The impact of the COVID-19 pandemic on the energy market – A comparative relationship between oil and coal. Energy Strategy Rev. 39, 100761. https://doi.org/10.1016/j.esr.2021.100761

Wasiuzzaman, S. (2022). Impact of COVID-19 on the Saudi stock market: Analysis of return, volatility and trading volume. Journal of Asset Management, 23(4), 350–363. https://doi.org/10.1057/s41260-022-00269-x

Zhang, D., Hu, M., Ji, Q., 2020. Financial markets under the global pandemic of COVID-19. Finance Res. Lett. 36, 101528. https://doi.org/10.1016/j.frl.2020.101528

Zhao, L., Rasoulinezhad, E., Sarker, T., Taghizadeh-Hesary, F., 2023. Effects of COVID-19 on Global Financial Markets: Evidence from Qualitative Research for Developed and Developing Economies. Eur. J. Dev. Res. 35, 148–166. https://doi.org/10.1057/s41287-021-00494-x