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# Evaluating the Relationship Between Global Stock Markets and Real Estate Markets Before and After the Coronavirus Pandemic

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## Abstract

The relationship between the stock market and the real estate market has been the focus of several studies in the past. The nature of this relationship continues to remain ambiguous, with results varying according to a country's economic condition and the level of co-integration between the two markets. This paper reviews the variables that influence the behavior of the stock market and the property market in the United States and the UAE. It examines whether these markets appear to be interlinked in these countries. To make the research more relevant, we have also reviewed the relationship between these two markets and how they have been influenced by the Coronavirus pandemic. As per our findings, the key variables impacting this relationship include the wealth effect, the percentage of real estate assets owned by publicly-traded companies, the news, the number of mortgage-backed securities available in the market, and the amount of risk associated with these securities. Besides this, initial public offerings (IPOs) and market liquidity also play a vital role. Regarding the Coronavirus pandemic, the primary impacts of this health crisis appear to be limited to the short-term. The most significant effects include a rise in stock market volatility, a decline in buying and selling activity, and delays in real estate construction projects in response to government restrictions and new Coronavirus-related deaths.

**Keywords**: Real estate, stock market, coronavirus pandemic, the impact of the stock market, property market, real estate prices, share prices, COVID-19 pandemic

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## 1. Introduction

The stock market has been historically linked to a variety of factors such as economic growth, political stability, fiscal policy, interest rates, investor expectations, and investor confidence. We also observe links between the stock market and other financial markets such as the foreign exchange market, bonds market, and commodities market. For example, as per (Goyenko & Ukhov, 2009), there is a link between the liquidity of the stock market and treasury bond markets and changes in monetary policy can impact illiquidity to influence the bonds market. The evidence collected indicates that the illiquidity of bonds can serve as a channel for transferring monetary policy shocks to the stock market, and there is an illiquidity integration between bonds and stock markets.

In addition, the stock market has also been associated with the real estate market. (Apergis & Lambrinidis, 2011) has discussed the relationship between the US and UK stock markets and the real estate markets. It evaluated the impact of the real estate market on economic development in these countries and reviewed how this would shape the future of their respective economies. Moreover, the researchers discussed how investor gains resulting from a bullish stock market could translate into higher spending and create the wealth effect. The researchers further reviewed whether these patterns lead to an increase in transactions in the real estate market. They identified that the wealth effect and the credit price effect-initiated changes in real estate prices, which consequently translated into changes in corporate profitability and caused the stock of these corporations to increase or decrease in value. This effect resulted from changes in the real estate assets of these companies. Besides this, changes in real estate value also led to changes in the credit or borrowing capacity of these corporations. This went on to influence the corporation's ability to initiate more or fewer investment projects and impacted its book value, which ultimately changed its stock market prices.

(Walker, 2016) also examined the link between real estate news and the share values of companies that were engaged in the housing market. As per the result, there exists a significant relationship between stock returns and the level of news coverage about the real estate sector. This further establishes the role of the media in serving as a source of information and driving investor sentiments in financial markets. (Quan & Titman, 1997) also reviewed the relationship between stock market returns and changes in property rents and values for 17 countries, including the United States. While there was no significant relationship between these two variables for the United States, the study concluded there is a significant relationship between stock market returns and changes in the real estate market for the other countries included.

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With respect to UAE real estate, (Al-Mohana & Hatemi-J, 2016) examined the relationship between the global stock market and the UAE real estate market. The researchers concluded that any symmetric shocks experienced in the global stock market did not have a statistically significant impact on the UAE real estate market.

Moreover, as per the researchers, there was no evidence indicating the global stock market had an impact on the price index of the UAE real estate market. When discussing the real estate markets and stock markets of the world, one must also account for the Coronavirus pandemic and its ongoing effect on these markets. Currently, there is limited research available on the potential impact of the Coronavirus pandemic on the stock market and the real estate market in countries like the United States and the UAE. First identified in Wuhan, China, in 2019, the Coronavirus has spread to all other countries. At the time of this writing, (Worldometer) has reported over 4,352,137 people to have died from the virus, and there have been a total of 206,424,284 positive cases.

With respect to the UAE, the virus has infected 699,381 individuals, and 1,994 people have died. UAE has performed relatively better in terms of controlling the virus and preventing the loss of life compared to other countries. The UAE has a population of 9.78 million, and per our estimate, only 7.1% of the population tested positive for the virus. However, like other countries, the UAE stock market and real estate market have also felt the impact of the Coronavirus pandemic. Accordingly, this research paper explores the relationship between global stock markets and real estate markets before and after the Coronavirus pandemic. In particular, it examines the impact of the pandemic on the UAE stock and real estate market. The remainder of this paper is arranged to highlight the significance of the study, the materials and methods used, the theory/calculation, the results, and finally, the discussion and conclusion.

## 2. Significance of the Research

Given that the Coronavirus pandemic emerged in 2019, there is insufficient research available on how the pandemic was able to influence the stock market and subsequently the real estate market in countries like the United States, as well as the UAE. This study attempts to identify the impact of the pandemic on the stock market and real estate market in these countries and establish a causal link between the UAE stock market and the real estate market and whether this impact accelerated during the Coronavirus pandemic. To the extent of our knowledge, there is no other study that has attempted to link the behaviour of these two markets during the Coronavirus pandemic.

## 3. Materials and Methods

We have utilized secondary data and reviewed existing research on the impact of the Coronavirus pandemic on the stock market in the United States and the UAE. We have also examined patterns observed in the stock market and the real estate market in these countries before and during the Coronavirus pandemic.

We primarily extracted data using research papers, newspaper articles, and other relevant literature. Reviewing this literature has allowed us to ascertain how the stock market and real estate market behaved pre-pandemic and during the pandemic. Moreover, it allowed us to observe if the real estate market in these countries responded to the performance of the stock market and vice versa.

## 4. Theory/Calculation

(Ceil, 2012) evaluated the development of the Dubai stock market and its impact on the economic growth of the city and concluded it had a positive effect on the city's economy. Moreover, this impact was linked to the real estate market and construction sector as well. As per the researchers, a rise in initial public offerings (IPOs) could increase market liquidity. This could potentially benefit the real estate and construction market as it attracts more sophisticated investors in the long term. With respect to the United States, (Okunev, Wilson, & Zurbruegg, 2000) evaluated the relationship between US real estate and the S&P 500 stock market index for the period 1972 to 1998. As per the linear test results obtained, the researchers were able to establish a unidirectional relationship from the real estate market to the stock market, suggesting the real estate market can influence the stock market, but not vice versa. A different phenomenon was observed for nonlinear test results, which displayed a significant unidirectional relationship from the stock market to the real estate market, thereby indicating that the stock market can impact the real estate market, but not vice versa.

A study by (Bahmani-Oskooee & Ghodsi, 2018) demonstrates asymmetric causality between the US stock market and the housing market. The researchers reviewed the housing market crisis in the country and its influence on the economy and the stock market in 2008. According to the results obtained for 39 out of 41 states, a decline in residential property prices caused the stock prices to decline, as well. The study established that the real estate market and the stock market were co-integrated in half of the states in the US, suggesting a strong link between real estate and stock market performance.

(Baker, Bloom, Davis, Kost, Sammon, & Viratyosin, 2020) evaluated the US stock market reaction to the Coronavirus pandemic and declared the pandemic to have an unprecedented impact on the stock market. Such an impact has never been observed before. As per the researchers, the pandemic caused over 1,100 moves in the stock market (both up and down), which was 2.5% greater than the number of daily fluctuations observed between 1900 to 2019. Moreover, none of the fluctuations observed during this period were attributed to the outbreak of an infectious disease or a pandemic. In comparison, two dozen fluctuations observed between February 24 to April 20, 2020, were attributed to Coronavirus-related developments. Similar effects were observed for the US economy. The researchers further discussed how the Spanish Flu of 1918 – 1919 had a modest effect on the United States economy. The influenza pandemic of 1957 to 1958 had a weak impact, and the 1968 pandemic had no apparent effect on the economy. It was inferred that the effect of the Coronavirus pandemic was more pronounced because of government restrictions curtailing commercial activity and individual mobility and the emphasis on voluntary social distancing. These restrictions had a powerful impact on a service-oriented economy. Moreover, policy responses to the pandemic and news on prospective and actual monetary and fiscal policy actions also had an impact on the US stock market during the pandemic.

(Mazur, Dang, & Vega, 2020) investigated the US stock market crash triggered by the Coronavirus pandemic in March 2020. As per their findings, shares of natural gas, healthcare, software, and food companies earned high positive returns. In comparison, stock values for petroleum, entertainment, hospitality, and real estate sectors, fell dramatically in value. For stocks that performed poorly, the researchers also observed extreme asymmetric volatility that correlated negatively with stock returns.

(Thorbecke, 2020) also evaluated the impact of the Coronavirus pandemic on the US economy by drawing evidence from the stock market. The study helped pinpoint the impact of the virus on key sectors, including real estate. It used stock price responses for various sectors to determine the effects of the virus on the US economy, a useful approach that helps determine how investors expect these trends to influence cash flows in a particular sector. As per the study, the real estate sector suffered heavily due to the pandemic. During the economy’s recovery period, home and home improvement sectors performed remarkably well. As per the researchers, while this elevated the comfort of these homeowners, the manner in which the real estate sector had suffered, homeowners would be unlikely to see a high return on investment for these home improvement plans when they chose to sell these homes.

(D'Lima, Lopez, & Pradhan, 2020) examined the impact of shutdown orders and the contagion rates of Coronavirus on real estate transactions. It was concluded that the pandemic created friction among buyers and sellers. This could be because buyers were

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unable to search for an optimal home due to government restrictions. Moreover, buyers sought discounted prices for properties located in high-risk zones. There was also a significant decrease in sale activity during the economy shutdown and re-opening periods. Average property prices declined in response to rising COVID-19 cases, as well. As per the results, market participants priced the health risks associated with the Coronavirus and concluded the statistical value of avoiding a Coronavirus-related death to be above $1.15 million. If we consider the impact of the Coronavirus pandemic on the UAE stock market, we find that the market suffered similarly in response to the virus. (Salman & Ali, 2021) reviewed the impact of the outbreak in Gulf countries and concluded that the stock markets in these countries suffered in the short term. The overall impact of the pandemic was also considerably less compared to global stock markets. Moreover, it was confirmed that the Chinese stock market had a bidirectional spill-over effect on the stock markets in Gulf countries.

(Alber & Saleh, 2020) also examined the impact of the Coronavirus on stock market indices in Gulf countries, and observed stock market returns to be sensitive to new Coronavirus-related deaths. It was suggested that variables such as Coronavirus Cumulative Cases, Cumulative Coronavirus Deaths, and New Coronavirus Cases did not fuel negative investor sentiments. This effect was only limited to new deaths, and only during March when the outbreak began. (Eleftheriou & Patsoulis, 2020) studied the relationship between the intensity of COVID-19 containment measures and stock market returns for more than 40 countries, including the UAE and the United States, and noted a negative relationship between these two variables. Moreover, increasing the intensity of Coronavirus non-pharmaceutical interventions in each country also led to a decline in the stock market returns for that country in the short term and the long term. Besides this, there were negative spill-over effects with respect to an increase in the intensity of government responses in a given country, which then caused the stock market returns to fall for interrelated countries in the short term and the long term. The study concluded that lockdown measures had a direct and indirect impact on stock market performance for all countries under examination.

(Sami, Shafiq, & Afzal, 2021) reviewed the impact of the COVID-19 pandemic on the real estate and construction industry in the UAE and outlined significant challenges in the form of schedule delays, delayed permits, inspections, and approvals, disrupted cashflows, travel restrictions, material and equipment shortages, serious health and safety concerns, and more. These challenges prevented the timely delivery of real estate construction projects. However, efforts made by the UAE government and the construction industry helped neutralize these challenges and offset the impacts of the pandemic. Some of the key initiatives taken in this regard included the availability of economic support programs, fee and fine waivers, digitization of processes, health facilities, and statutory relaxations.

## 5. Results

Based on the review of the existing literature on the relationship between the stock market and the real estate market in the United States and the UAE has enabled us to identify several patterns. With respect to the United States, the following variables influence the relationship between these markets:

### *The Wealth Effect and Book Value of Real Estate Assets*

A bullish stock market encourages increased investment activity, leading to the wealth effect. This can lead to changes in real estate prices. In particular, if these real estate assets are owned by publicly-traded companies, then an increase or decrease in their value influences the company's ability to buy, lend, and invest –activities that ultimately influence the share prices of the company. We can assume a cyclical relationship here where a bullish stock market has a positive impact on real estate price levels, which can further increase or decrease the stock value of companies with investments in the real estate market and cause the market to go up or down.

### *News and Other Media*

News outlets that typically drive investor sentiments also play a defining role in the relationship between the stock market and the real estate market. The type and frequency of real estate news can influence the stock value of companies with investment in the real estate sector. Besides this, news alerts on prospective and actual changes in monetary and fiscal policy also influenced the US stock market during the COVID-19 pandemic. Quantifying this impact is difficult, but we can infer investors may be driven to buy, sell, or hold these assets in response to the information they receive about a specific company or sector via news outlets.

### *The Housing Crisis and Mortgage-backed Securities*

In the United States, during the housing market crisis of 2008, the real estate market and stock market were co-integrated in over 50% of the states. As real estate prices fell, the stock price levels declined, as well and the stock market crashed. This was due to defaults on consolidated MBS (mortgage-backed securities), which comprised majorly of subprime mortgages offered to nearly everyone, even customers with poor credit ratings. During the housing crisis, homeowners with low credit scores defaulted on their loans, thereby impacting the value of mortgage-backed securities. The banks that had heavily invested in these loans also suffered. As a result, companies that had a relationship with these banks felt the impact of the housing crisis, and their share prices fell, ultimately causing the stock market crash of 2008.

With respect to the stock market and real estate market in the UAE, we have limited research relating to the relationship between these two markets and have identified the following variables to influence this relationship.

***IPOs and Market Liquidity***

Initial public offerings (IPOs) appear to have a positive impact on the real estate sector. These IPOs can increase market liquidity. As a private firm transforms into a publicly-traded company and its shares become available in the market, we observe an overall rise in the value of the firm and market liquidity. This has the potential to attract more investors in the market, who can go on to diversify their portfolios by investing in the real estate market. Thus, improved market liquidity can have a positive impact on real estate. We have also reviewed the impact of the Coronavirus on the US and UAE stock market and real estate market. Provided herewith is an overview of the effects of this health crisis on these markets:

***Increased Stock Market Volatility Due to Government Restrictions***

The health crisis was responsible for increased fluctuations in the stock market. Compared to other health crises, such as the Spanish Flu and the influenza pandemic, the US stock market showed increased sensitivity to Coronavirus-related developments. The enhanced impact of the virus has been associated with government restrictions that reduced the level of commercial activity and individual mobility. These restrictions had a significant impact on the service industry, which primarily relies on in-person interactions. With the sectors that are a part of this industry underperforming, one can anticipate the stock market to respond accordingly.

We have also referred to another study to confirm that there is a significant negative relationship between the intensity of COVID-19 containment measures and stock market returns for the UAE and the United States. A negative relationship between the increase of Coronavirus non-pharmaceutical interventions and stock market returns in the short term and the long term was also observed. Finally, research suggests that shares of natural gas, healthcare, software, and food companies performed positively and increased in value. In comparison, shares of petroleum, entertainment, hospitality, and real estate companies witnessed a dramatic decline in value.

***Reducing Buying and Selling Activity***

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According to (Gascon & Haas, 2020) the real estate sector in the United States suffered significant losses with home sales dropping to their lowest level since the housing and financial crisis of 2008. The number of delisted homes also increased by more than 25% compared to 2019. The number of buyers reduced and home showings for each listing declined by more than 40%. Other indicators of housing demand, such as queries for agents, online search activity, and the number of offers made also saw a sharp decline in April 2020. Conversely, the drop in demand was not accompanied by a decline in home price levels. There was no significant reduction in price levels. We can attribute this to low levels of housing supply and historically low mortgage rates that enabled home prices to remain steady during April and May 2020. Other research suggests that buyers still sought discounted prices, particularly in high-risk zones. Moreover, property prices appear to respond to rising COVID-19 cases. It was also concluded that the statistical value of avoiding a COVID-19 related death was estimated to be over $1.15 million.

***Increased Sensitivity to Coronavirus-related Deaths***

The impact of the Coronavirus pandemic on Gulf countries, such as the UAE was similar to that in other countries. However, with respect to the stock market, these effects existed in the short term. This can be attributed to the limited spread of the virus in the UAE. As mentioned earlier, the virus infected 699,381 individuals in the country, and 1,994 people died. At the time of this writing, only 7.1% of the UAE population tested positive for the virus. However, the UAE stock market is not entirely immune to the COVID-19 pandemic. As another study has confirmed, stock market returns in Gulf countries were increasingly sensitive to new Coronavirus-related deaths. In particular, these effects were most prominent in March 2020. Other variables such as Coronavirus Cumulative Cases, Cumulative Coronavirus Deaths, and New Coronavirus Cases did not have a significant impact. This phenomenon can be attributed to investor sentiments and increased levels of apprehension and anxiety surrounding the health risks of the virus. While investors may not be influenced by cumulative cases, new cases, or cumulative deaths, the news of new deaths related to the virus is expected to have a significant impact. Such news fuels negative emotions within investors and highlights the adversity of the situation. It also indicates government inefficiency and the impact of the virus on the economy in Gulf countries. All these variables ultimately reduce investment activity, with investors unwilling to take on more risk.

***Delayed Property Developments***

A final impact observed for the Coronavirus was its effect on the real estate and construction industry in the UAE. The health crisis led to a number of challenges, including delays in schedule, delayed inspections, permit acquisitions, cashflow disruptions, travel restrictions, shortages in material and equipment, and health and safety concerns for onsite personnel. These issues are directly aligned with social distancing guidelines and restrictions on commercial activity in the UAE. However, research suggests that the UAE government lent support to real estate investors and property developers to counter these issues. It offered multiple economic support programs, such as an economic stimulus package of AED 1.5 billion. The package was later increased to AED 7.1 billion. Besides this, the government also introduced relaxation in terms of fees and fines for the construction industry. The increased adoption of digital processes and statutory relaxations also aided real estate construction.

## 6. Discussion

The relationship between the real estate market and the stock market varies according to the country under consideration. In the United States, these markets appear to be linked via unidirectional relationships, cyclical relationships, and bidirectional relationships depending on the condition of the economy. We have also observed spillover effects from other economies impacting the UAE and US stock markets. Depending on market conditions, stock market performance has the potential to influence real estate price levels. This was most prominently observed in the United States during the housing crisis of 2008, where a concentration of mortgage-backed securities caused the stock market to crash after the housing crisis. US banks have taken several measures to reduce such risks and prevent a re-occurrence of such an event. As per (Lerner, 2018) banks have adopted better methods that lend more transparency to the mortgage application and approval process. They have also removed risky loan products and opted for more sustainable options. Besides this, they have become increasingly vigilant about monitoring credit scores and opted for better documentation and record maintenance. It is observed that the wealth effect with bullish stock markets increasing real estate price levels, which in turn increases the share prices of companies with real estate assets. Companies with real estate assets also see volatility in terms of share prices, depending on the level of news coverage extended to the real estate sector. This coverage appears to influence investor sentiments. Companies with investment portfolios that rely heavily on the real estate sector are advised to keep a close eye on the news and other media and whether it induces positive or negative perceptions.

With respect to the UAE stock market and real estate market, the government can consider offering incentives to private companies to convert into publicly-traded organizations. This could have a positive impact by improving market liquidity and increase the level of foreign direct investment in the stock market, as well as the real estate market. The implications of this finding can create long-term value for the UAE economy. This paper also reviews the impact of the Coronavirus on the real estate market and the stock market in the US and UAE and suggests that the pandemic increased stock market volatility due to government restrictions and health concerns. The number of new Coronavirus-related deaths proved to be a particularly significant factor in influencing stock market performance in Gulf countries. With vaccine rollouts underway in the US, as well as the UAE, we can expect such effects to last in the short term only. Once the economy re-opens fully, stock market activity is likely to reach pre-pandemic levels again. Other significant impacts of the pandemic on the real estate market include a decline in buying and selling activity. In the US, housing demand and supply fell significantly in the short term. The number of de-listings increased and buyers sought homes available at a discounted price. However, it appears that due to low mortgage rates and limited supply, prices remained relatively stable. As mortgage rates continue to remain low, we can expect the low demand to only last in the short term. Moreover, as demand increases, we can also assume price levels to increase further. A different trend has been observed in the UAE. As per (Salbak, 2021) property prices are expected to decline by 8% in 2021 due to continued oversupply. Controlling the current supply, increasing foreign investment, and taking suitable initiatives to increase demand can help counter these effects. It has also been suggested that developers will phase out real estate construction projects to bring down the supply to reasonable levels.

Finally, the pandemic also caused delays in real estate construction projects. The UAE government appears to be taking suitable steps to counter these effects by offering stimulus packages to revive business and commercial sectors. There has also been a relaxation of fees, penalties, and statutory regulations. Continuing these efforts can influence the real estate sector in a positive manner by ensuring timely completion of projects and effective use of resources.

## 7. Conclusions

This paper examines the relationship between the stock market and the real estate market in the United States and the UAE. It also reviews the impact of the Coronavirus pandemic on these two markets in these countries. With respect to the United States, there appears to be a significant relationship between the stock market and the housing market. However, the nature of this relationship appears to vary as per the economic conditions and the stock market's exposure to real estate. In the UAE, we were only able to discern initial public offerings as a significant variable that can potentially increase investment activity in the real estate sector.

With respect to the Coronavirus pandemic, the health crisis increased stock market volatility in the US and Gulf countries. It also influenced buying and selling activities. However, both of these effects appear to exist in the short term. Other effects include delays in construction and increased sensitivity to new Coronavirus-related deaths and government restrictions. Real estate investors should consider accounting for these variables when making investment decisions in the property market. They can also review stock market performance to make an informed decision.

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