

# A Review of COVID-19 Impacts on Global Residential Property Prices and Key Trends: UK, China, Malaysia, Singapore and United States

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## ABSTRACT

**Purpose** – This study seeks to assess the global effects of the COVID-19 pandemic on the real estate market. The results will offer valuable insights into potential impacts on macroeconomic stability, as well as provide an overview of current trends and existing literature in relation to the real estate market. These insights can aid policymakers, investors, and consumers in implementing measures to alleviate economic disruptions, counter adverse effects, and pinpoint fresh opportunities within the global real estate markets.

**Design/Methodology/Approach** – This research article is based on a review of the literature on the impact of COVID-19 on the real estate market in the United States, Europe, and Asia. The literature review includes academic articles and industry reports. The data and information from these sources were analyzed and synthesized to provide a comprehensive overview of the impact of COVID-19 on the real estate market in the three regions. At the same time, trend analyses are conducted on the property prices in Malaysia, Singapore, China, Thailand, the United States and UK before, during and after the COVID-19 pandemic. Trend analysis emerges as a robust methodology for scrutinizing residential property prices owing to its inherent advantages. Its protracted time horizon allows for the examination of price fluctuations over extended periods, elucidating enduring market dynamics including economic cycles.

**Findings** – The study provides a nuanced view of the global impact of the COVID-19 pandemic on the property market. It highlights that different countries have experienced varying effects, with some seeing declines in housing prices while others observe an increase. The research emphasizes the crucial role of macroeconomic stability in the real estate market and underscores the need for effective policies to mitigate economic shocks. Examining cases like China and Korea, the study demonstrates that swift government responses, through macroeconomic surveillance and implementation of stimulating policies, have successfully protected and boosted the real estate market, leading to positive price trends. This underscores the importance of proactive macroeconomic surveillance and prudent policies for safeguarding and promoting the real estate market during global crises. Conversely, instances in Italy and Spain illustrate that recessions can generate economic uncertainty and job losses, resulting in a decrease in property prices. To counteract this, governments and regulators should consider measures like guaranteed wage subsidies, job creation initiatives, and unemployment insurance to stimulate the real estate market and restore public confidence. Regarding market trends and behaviours, the research identifies a growing demand for residential properties with larger spaces in countries such as China, Singapore, the US, Germany, and France. Conversely, the hospitality and commercial property sectors, including offices and hotels, have been consistently negatively impacted by the pandemic across many countries. The study also highlights improvements in safety procedures and building management due to the pandemic. Furthermore, there is a notable shift in preferences towards online business operations and working from home, leading to an increased demand for industrial and logistical properties compared to retail and commercial spaces. Additionally, there is a rising interest in suburban and single-family homes, creating a new market opportunity for developers as more buyers and consumers express a preference for living in suburban areas with larger living spaces. Lastly, residential property prices in Malaysia,

Singapore, China, Thailand, the US and UK showed similar trends before, during and after the COVID-19 pandemic where all prices dropped before a rebound after the pandemic ended.

**Research Limitations/Implications** – This study has several limitations that warrant consideration. Firstly, it relies on a review of existing literature, industry reports, and news articles, potentially missing some nuances in the impact of COVID-19 on the real estate market. Secondly, the ongoing nature of the pandemic means that its long-term effects remain uncertain, making it possible that the study's findings may not accurately predict future trends in the real estate market. Furthermore, the study's scope is limited to specific countries in three regions (US, Europe, and Asia), and the impact of COVID-19 on the real estate market may differ in other global regions. Lastly, potential biases in data collection and reporting could affect the representativeness of the data used in this study. As a result, it is important to interpret the findings with caution, and further research is needed for a comprehensive understanding of COVID-19's impact on the real estate market.

**Practical Implications** – The research underscores the critical role of policymakers in addressing unemployment through strategic measures such as guaranteed wage subsidies, job creation policies, and unemployment insurance. These initiatives not only stimulate the real estate market but also reinstate public confidence. Moreover, the study emphasizes the importance of tackling underlying economic issues and deploying tailored policies to foster resilience and sustainable economic growth amid adversity. Additionally, it identifies a growing preference for suburban and single-family homes, presenting a lucrative market opportunity for developers to capitalize on this trend and cater to the increasing demand for larger living spaces in suburban areas.

**Social Implications** – The study underscores the social implications of policymakers prioritizing initiatives to combat unemployment and control housing prices. By implementing measures such as guaranteed wage subsidies, job creation policies, and unemployment insurance, communities can experience not only economic revitalization but also enhanced social cohesion and well-being. The restoration of public confidence in the real estate market can lead to increased stability and prosperity for individuals and families. Additionally, controlling housing prices ensures accessibility and affordability, fostering inclusive communities and reducing socioeconomic disparities. The rising demand for suburban and single-family homes reflects evolving lifestyle preferences, highlighting the importance of urban planning and development strategies that prioritize community needs and aspirations for spacious living environments. Thus, addressing unemployment through targeted policies while also controlling housing prices can have profound social implications, promoting inclusive growth and sustainable urban development.

**Originality/Value** – This study stands out for its extensive examination of COVID-19's effects on the real estate market in the US, Europe, and Asia. While prior research has concentrated on specific segments or regions, this study offers a comprehensive view of how various sectors and regions worldwide have been impacted. Additionally, the study sheds light on the societal and practical consequences of the pandemic on the real estate market, offering valuable insights for adapting to evolving consumer demands and addressing socio-economic concerns. In summary, this research presents a distinctive perspective on COVID-19's influence on the real estate market, offering valuable implications for policymakers, real estate professionals, and investors.

## INTRODUCTION

The COVID-19 pandemic has affected every aspect of society, and the real estate market is no exception. With millions of people forced to work from home, there has been a shift in consumer preferences towards larger homes with more outdoor space (Bolisani, 2020). Additionally, the pandemic has led to economic uncertainty, job losses, and disruptions to supply chains, all of which have had a significant impact on the real estate market (Santos, 2022). The COVID-19 pandemic also has far-reaching impacts on the global economy, disrupting supply chains, causing job losses, and affecting consumer demand (Onyeaka, 2021). One of the sectors that have been significantly impacted is the real estate market (De Toro, 2021). The pandemic has created an unprecedented level of uncertainty, causing fluctuations in housing prices across the world (Jovanović-

Milenković, 2020). Understanding the impact of macroeconomic conditions during the pandemic on housing prices is critical for policymakers and investors. This study aims to examine the impacts of macroeconomic conditions during the COVID-19 pandemic on housing prices across the world (Kartal, 2023). The study's findings will provide insights into how macroeconomic stability can affect the real estate market and inform policymakers on measures to mitigate economic shocks (Tham et al., 2021; Tham KW, 2021).

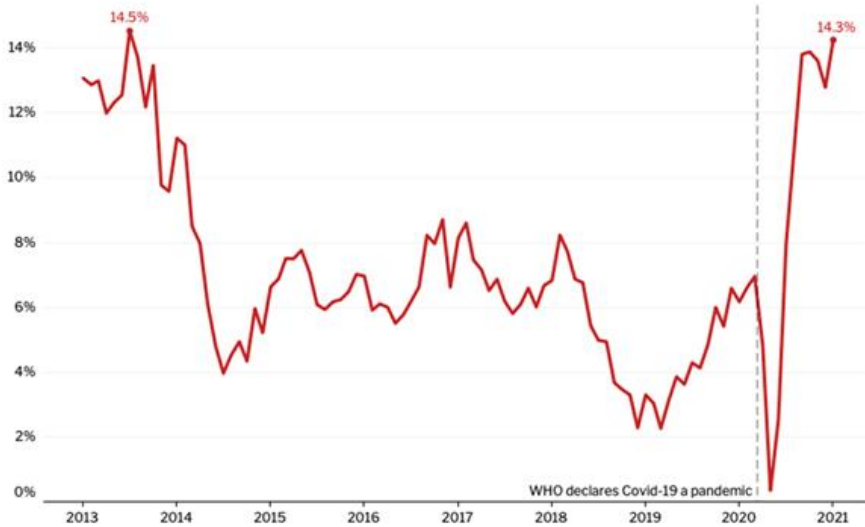


Chart 1: Changes in Residential Home Prices in USA during and after the COVID-19 Pandemic.

(Source: Redfin, 2021)

In the United States, the residential real estate market felt a significant impact from the COVID-19 crisis this spring. Concerns over health and stay-at-home mandates led to a decrease in the number of buyers actively searching for homes, and fewer sellers were willing to list their properties or permit strangers to enter their homes during the pandemic. Despite this initial slowdown, there was a notable rebound in home sales during the summer. Simultaneously, the health crisis introduced economic challenges in the form of job losses and heightened uncertainty. Effects of the 2007-09 housing crisis still weigh heavily on many individuals. Some homeowners are grappling with difficulties in meeting their mortgage payments, and the unemployment rate remains at historically elevated levels. Due to the pandemic, many households are now reassessing their housing needs, as their homes have taken on new roles as offices, schools, restaurants, and recreational spaces (Federal Bank of St Louis, 2023).

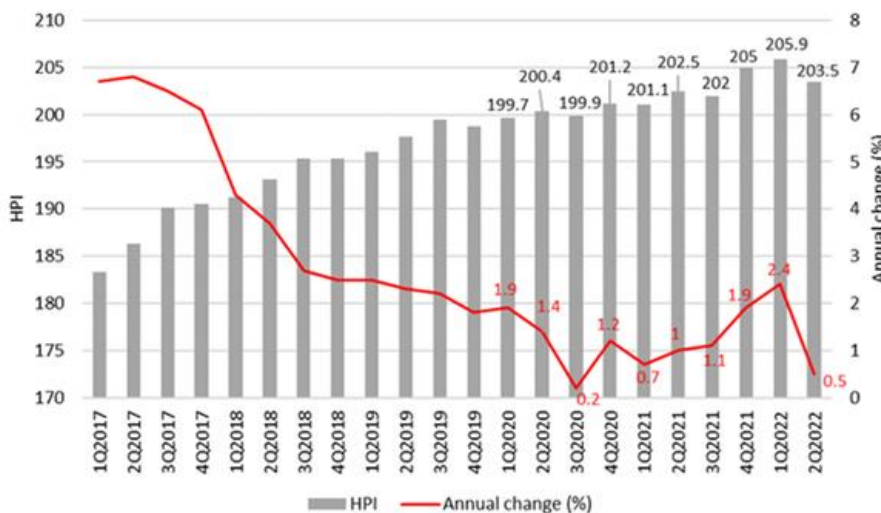


Chart 2: Changes in Malaysian House Price Index

(Source: Foo CH, 2022)

In South East Asia countries such as Malaysia, the residential real estate market experienced a significant impact from the COVID-19 crisis. Concerns about health and stay-at-home orders resulted in a reduced number of buyers seeking homes, as well as fewer sellers willing to list their properties or allow strangers into their homes during a pandemic (Foo CH, 2022). Despite the sharp decline in activity from 2019 to 2020, there was a resurgence in home sales in 2021. Concurrently, the health crisis brought about economic challenges in the form of job losses and increased uncertainty. Memories of the 2007-09 housing crisis continue to influence many individuals, as some homeowners face difficulties in meeting their mortgage payments and the unemployment rate remains at historically high levels. Due to the pandemic, numerous households are reevaluating their housing requirements, as their homes now serve as substitutes for offices, schools, restaurants, and recreational facilities. The Malaysia house price growth from 2010 to 2015 was particularly steep with a CAGR of 7.63%, driven by a favourable lending policy – market optimism from buyers regarding future capital appreciation from property investment as well as the introduction of developer interest-bearing scheme (DIBS) helped drum up buying sentiment (Foo CH, 2022). However, a series of cooling measures put in place by Bank Negara Malaysia (BNM) since 2014 has prevented the property market from overheating. This includes various initiatives such as imposing of taxes which led to impactful changes in the real estate market (Tham et al., 2022; Tham et al., 2021) The country's housing market is said to enter a period of adjustment. Coupled with limited financing availability due to tighter credit standards and limited income growth to support home price increases since 2018, the current property market appears to be in no danger of any impending bubble. The COVID-19 pandemic also has had a profound impact on the global economy, with the real estate market being one of the most affected sectors. The pandemic has brought about significant changes in consumer behaviour and preferences, which have had ripple effects on the real estate industry (Zwanka, 2021). This literature review aims to examine the impact of COVID-19 on the real estate market in the US, Asia, and Europe.

The findings suggest that macroeconomic conditions have had a mixed impact on housing prices during the COVID-19 pandemic. Some countries have experienced declining housing prices, while others have seen an increase in prices. For example, in the United States, housing prices have increased in suburban areas, while in some metropolitan areas, prices have declined. In Europe, the pandemic has led to declining housing prices in some countries such as Greece and Italy. In contrast, in other countries such as Germany and the Netherlands, prices have remained stable or increased slightly. The study also found that the impact of macroeconomic conditions on housing prices is complex and depends on various factors such as government policies, market structure, and consumer behaviour. Macroeconomic conditions had been known to affect the real estate finance system (Chai et al., 2024; KW Tham, 2022; Wei TK & Said, 2021).

## **GLOBAL IMPACTS ON THE PROPERTY MARKET**

### **Global Impacts on the Property Market in China, Malaysia and Singapore**

Previous studies have examined the impact of macroeconomic conditions on housing prices in various countries and regions. For example, Qian et al. (2021) analyzed the impact of the COVID-19 pandemic on the real estate market in China and found that GDP growth, unemployment, and interest rates have a negative impact on housing prices (Qian et al., 2021). According to a report by Knight Frank, the housing prices in China increased by 4.9% in 2020, despite the pandemic (Knight Frank, 2022). In cities such as Beijing and Shanghai, housing prices increased by 6.2% and 6.6%, respectively. This surge in demand was driven by several factors, including an influx of capital into the real estate market and a shift in consumer preferences towards larger homes with more outdoor space. However, the pandemic also had a negative impact on the Chinese economy, leading to job losses and economic uncertainty (Duan, 2021). This has put downward pressure on housing prices in some areas, particularly in the lower-tier cities.

The COVID-19 pandemic also has a significant impact on housing prices in Asia (Allan, 2021). In countries such as China and South Korea, the government has implemented measures to stimulate the real estate market,

leading to an increase in housing prices despite the pandemic (Jiang, 2021). In other countries such as India, the pandemic has led to a decline in housing prices due to the economic uncertainty and job losses (Kumar, 2020). According to another research in India, the housing prices in India declined by 1% in 2020 as a result of the pandemic (Pusarla, 2020).

In China, the impact of COVID-19 on the real estate market has been largely positive (Xu, 2022). The government implemented measures to stimulate the housing market, such as cutting interest rates and relaxing lending policies (Wei, 2021). These measures led to an increase in demand for housing, particularly in the larger cities, driving up housing prices. However, the pandemic also had a negative impact on the Chinese economy, leading to job losses and economic uncertainty, which put downward pressure on housing prices in some areas (Mou, 2020, July).

In Singapore, the COVID-19 pandemic has a mixed impact on the housing prices (Ling, 2022). The pandemic has led to a surge in demand for larger homes with more space, as people are spending more time at home due to remote work and social distancing measures (Charoenwong, 2020). This trend has led to an increase in sales of landed properties and larger apartments, driving up housing prices in those areas. However, the pandemic has also led to a decline in demand for rental properties, particularly in the central business district (CBD), as many expats and foreign workers have left the country due to travel restrictions and economic uncertainty (Rattanaprichavej, 2021). This has put downward pressure on housing prices in the rental market, with rents declining by 0.8% in 2020.

Additionally, the pandemic has led to a decline in foreign investment in the Singapore property market, as travel restrictions and economic uncertainty have made it more difficult for foreigners to invest in the country. This has put downward pressure on housing prices in the luxury market, with prices declining by 2.2% in 2020.

In Malaysia during the early stages of the pandemic, the Malaysian property market experienced a slowdown marked by economic uncertainty, job losses, and concerns surrounding the virus, leading to a notable decrease in property transactions and demand (Foo CH, 2022). In response, the Malaysian government implemented various measures to bolster the property market, including initiatives like the Home Ownership Campaign (HOC) and stamp duty exemptions aimed at stimulating home ownership. Commercial properties, especially offices and retail spaces, were significantly impacted as lockdowns and restrictions posed challenges for businesses, resulting in reduced demand for these spaces. A shift in housing preferences emerged, driven by the prevalence of remote work, with individuals prioritizing larger homes equipped with dedicated spaces for remote work and outdoor areas. The real estate industry in Malaysia also embraced digitalization, utilizing tools like virtual tours and online listings to adapt to social distancing measures (Lim, 2021). Additionally, the government extended support to developers, offering incentives to spur property development and stimulate economic activity within the real estate sector. Property price trends displayed a mixed pattern, with some areas maintaining stability or experiencing modest increases, while others faced declines, particularly in the early stages of the pandemic. Despite initial challenges, the Malaysian property market demonstrated resilience, gradually rebounding as the country reopened and economic activities resumed. It's important to acknowledge that the performance of the property market during the pandemic varied based on factors such as location, property type, and local economic conditions. The information provided serves as a general overview, and specific details may differ for distinct segments of the market.

In fact, from the perspective of the capital markets in Malaysia, the Malaysian Kuala Lumpur Stock Exchange is affected by the pandemic as well. The following shows the price to earnings ratio of the top five leading property developers in Malaysia that are listed on the Kuala Lumpur Stock Exchange:

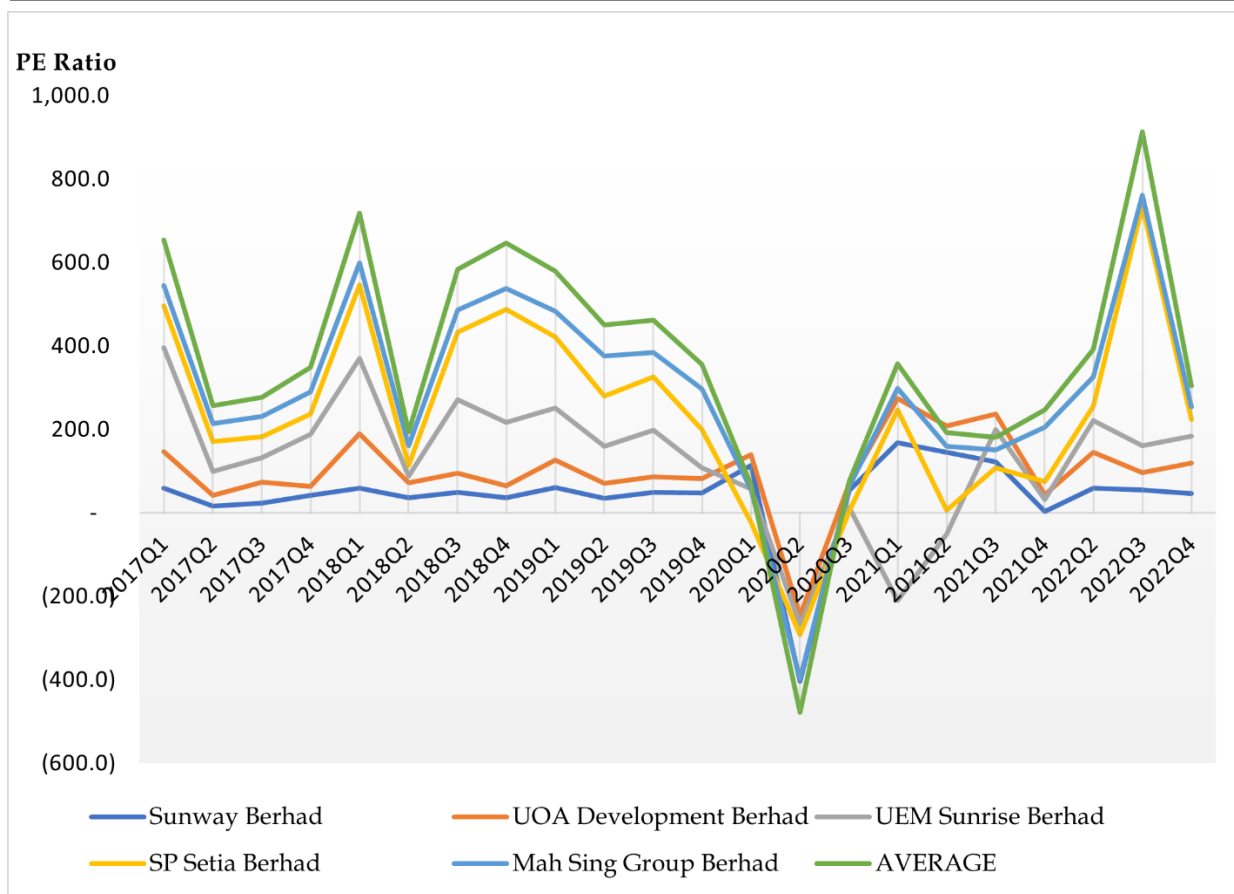


Chart 3: Business Value Indicator (PE Ratio) of Five Leading Property Developers in Malaysia (2017-2022)

(Source: Bursa Malaysia, Authors)

All of the property developers within the property sector experienced a similar decline in its business value from 2019 to 2020, before recovering in 2021. Another study conducted by Adnan (2022) based on twelve Asian capital markets showed that all the markets are adversely affected on the event day of COVID-19, as shown by statistically significant negative average abnormal return and cumulative average abnormal return (Adnan, 2022). A study conducted in Bangladesh on the Chittagong Stock Exchange (CSE) also showed that the capital markets are affected as well by the COVID-19 pandemic for the energy, telecommunication, insurance and miscellaneous sectors (Jahan, 2021). While the study did not focus on the property market sector, it sheds light into the volatility of the share market performance affected by COVID-19. In fact, the impacts of the COVID-19 pandemic had also affected stock markets in almost every major exchanges including Saudi Arabia, Bangladesh, USA, Singapore, UK, and China (Samargandi, 2023; Jahan, 2021; Mazur et al., 2021; He et al., 2020)

### Impacts of COVID-19 on the Property Market in the US

In the United States, several studies have examined the impact of the pandemic on the real estate market. For example, Li et al. (2020) found that the pandemic has led to declining housing prices in some metropolitan areas. The pandemic has had a mixed impact on the real estate market in the US (Akinsomi, 2021). On the one hand, the pandemic has led to a surge in demand for larger homes with more space, as people are spending more time at home due to remote work and social distancing measures (Alsharif, Early impacts of the COVID-19 pandemic on the United States construction industry., 2021). This trend has led to a significant increase in sales of single-family homes in suburban and rural areas. On the other hand, the pandemic has had a negative impact on the commercial real estate market, with many businesses being forced to shut down or reduce their operations, leading to a decrease in demand for office and retail spaces (Kaushik, 2020). According to a report

by CBRE, the vacancy rates for office spaces in the US increased by 90 by 90 basis points to 13.5% in 2020. Similarly, (Duca J. V., 2021) examined the impact of the pandemic on the real estate market in the USA found that the pandemic has led to declining prices of condominiums and detached houses in numerous locations (Duca J. V., 2021).

In the United States, the pandemic has led to a surge in demand for suburban homes with more outdoor space, as people look to escape crowded cities and work from home. This trend has led to a shortage of inventory and an increase in housing prices in suburban areas, particularly in cities such as New York and San Francisco (Ng, 2022). However, the pandemic has had a negative impact on the commercial real estate market, with many businesses forced to close or downsize, leading to a decline in demand for office space (Uchehara, 2020). In cities such as New York and San Francisco, there has been a significant increase in office vacancies as companies have implemented work-from-home policies during the pandemic (Hensher, 2023). For example, in Manhattan, the vacancy rate for office space increased to 16.3% in the fourth quarter of 2020, up from 11.3% a year earlier. This has led to decreased rental rates for office space in many urban areas. The pandemic has also accelerated the shift towards e-commerce and online shopping, leading to decreased demand for brick-and-mortar retail space (Nanda, 2021). In the UK, for example, the retail vacancy rate increased to 13.7% in the fourth quarter of 2020, up from 13.4% a year earlier. This has led to increased vacancies and reduced rental rates for retail properties. At the same time, physical learning in universities has also transformed to online learning being the new norm (Al-maani et al., 2021).

There is also increased demand for industrial and logistics properties in the US. With the increase in online shopping, there has also been an increased demand for industrial and logistics properties (Hoesli M., 2022). In the US, the industrial vacancy rate decreased to 4.6% in the fourth quarter of 2020, down from 4.9% a year earlier. This has led to increased rental rates and decreased vacancies in this sector. The pandemic also has a significant impact on the hospitality industry, leading to decreased demand for hotels and other hospitality properties (Ozdemir, 2021). In the US, the hotel occupancy rate decreased to 44.0% in 2020, down from 66.1% in 2019. This has led to increased vacancies and reduced rental rates for these properties.

In terms of policies, there is more focus on health and safety as a result of the pandemic. Building owners and operators have had to implement measures such as increased cleaning, improved air filtration systems, and social distancing protocols to ensure the safety of tenants and visitors (Alsharef, 2021). For example, some office buildings have implemented touchless entry systems and have increased the frequency of cleaning and disinfecting common areas. This has become an important consideration for tenants when choosing office space or other.

### **Impact on the Property Market in Europe**

The COVID-19 pandemic has had a significant impact on the real estate market in Europe (Hoesli M., Commercial real estate prices and COVID-19, 2022). The pandemic has led to a surge in demand for residential properties, particularly in countries such as Germany and France, where people are looking for larger homes with more outdoor space (Chmielewska, 2022). However, the pandemic has had a negative impact on the commercial real estate market, with many businesses being forced to shut down or reduce their operations, leading to a decrease in demand for office and retail spaces (Tanrıvermiş, 2020). According to a report by Colliers International, the vacancy rates for office spaces in Europe increased to 7.6% in 2020.

At the same time, the COVID-19 pandemic also has a mixed impact on housing prices in Europe. In countries such as Germany and France, where people are looking for larger homes with more outdoor space, the pandemic has led to an increase in housing prices (Mattarocci, 2020). However, in other countries such as Spain and Italy, the pandemic has led to a decline in housing prices due to the economic uncertainty and job losses (Altig, 2020). According to a report by the European Mortgage Federation, the housing prices in the Eurozone declined by 1.8% in 2020.

In Europe, the impact of COVID-19 on the real estate market has been mixed (Delardas, 2022). In the United Kingdom, the pandemic has led to a decline in demand for commercial real estate, particularly in the retail and hospitality sectors (Balemi, 2021). However, the residential real estate market has remained strong, with a surge in demand for larger homes with more outdoor space. In Germany, the real estate market has remained relatively stable, with housing prices continuing to rise in urban areas (Fritsche, 2021).

The impact of COVID-19 on the real estate market has been significant, with changes in consumer behaviour and preferences leading to a shift in demand for certain types of properties (Muhyi, 2021). The COVID-19 pandemic has had a significant impact on consumer behaviour towards real estate. As people spend more time at home, there has been a shift towards larger homes with more outdoor space. This trend has been particularly noticeable in urban areas, where people have been seeking homes with balconies, gardens, or access to outdoor space (Elrayies, 2022).

At the same time, with more people working from home, there has been an increased demand for homes with dedicated office space or the ability to create a workspace (Awada, 2021). Homes with spare bedrooms or extra living areas have become more desirable, as people look for space to work without being interrupted by other household members. The extent of the pandemic also causes housing design to change in response to safety (Appau et al., 2023). Studies also showed that as a result of pandemic, there had been more frequent use and demand for open air spaces and balconies (Khalil & Eissa, 2022).

The pandemic has also accelerated the use of technology in real estate transactions (Kania, 2022). Virtual property tours, digital signing of documents, and remote closings have become more common as people have sought to limit in-person contact during the pandemic.

Besides, the pandemic has led to a shift in location preferences, with people seeking out less densely populated areas with more outdoor space (Boesel, 2021). This has led to increased demand for suburban and rural areas, as people look for homes that offer more privacy and space.

There had also been an increased interest in sustainable living. The pandemic has raised awareness of the importance of sustainability and environmental issues (Rupani, 2020), and this has translated into increased interest in sustainable living. Homes with energy-efficient features and green spaces have become more desirable as people look for ways to reduce their environmental impact (Megahed, 2020).

Overall, the COVID-19 pandemic has led to significant changes in consumer behaviour towards real estate (Mehta, 2020), with a greater emphasis on larger homes, home office space, technology, location preferences, and sustainable living. These trends are likely to continue in the post-pandemic era, as people continue to seek out homes that meet their changing needs and preferences.

### **Commercial Property Markets**

The COVID-19 pandemic has had a significant impact on the commercial real estate market (Balemi, COVID-19's impact on real estate markets: review and outlook., 2021). In the middle east, there had been a decreased demand for office space (Naor, 2022). With many companies implementing work-from-home policies during the pandemic, there has been a decrease in demand for office space. This has led to increased vacancy rates in many office buildings, particularly in urban areas (Gupta, 2022). There are also changes in retail patterns. The pandemic has accelerated the shift towards e-commerce and online shopping, leading to decreased demand for brick-and-mortar retail space (Alwan, 2023). This has led to increased vacancies and reduced rental rates for retail properties.

In China, the pandemic has also led to increased demand for industrial and logistics properties, as online shopping has increased and companies have sought to strengthen their supply chain resilience (Shen, 2023).



This has led to increased rental rates and decreased vacancies in this sector. Lastly, the pandemic has had a significant impact on the hospitality industry, leading to decreased demand for hotels and other hospitality (Ozdemir, Quantifying the economic impact of COVID-19 on the US hotel industry: Examination of hotel segments and operational structures., 2021). This has led to increased vacancies and reduced rental rates for these properties.

The pandemic has also led to an increased focus on health and safety in commercial real estate. Building owners and operators have had to implement measures such as increased cleaning, improved air filtration systems, and social distancing protocols to ensure the safety of tenants and visitors. Overall, the COVID-19 pandemic has had a significant impact on the commercial real estate market, leading to decreased demand for office and retail space, increased demand for industrial and logistics properties, decreased demand for hospitality properties, and an increased focus on health and safety. These trends are likely to continue in the post-pandemic era, as companies and consumers adapt to the changing landscape of the commercial real estate market.

## **METHODOLOGY, DATA & ANALYSIS**

A comprehensive review of the literature on the impact of COVID-19 on the real estate market in the United States, Europe, and Asia. The literature review includes academic articles and industry reports. The data and information from these sources were analyzed and synthesized to provide a comprehensive overview of the impact of COVID-19 on the real estate market in the three regions.

Aside to comprehensive review, trend analyses are conducted on the property prices in Malaysia, Singapore, China, Thailand, the United States and UK before, during and after the COVID-19 pandemic. Secondary data extracted from various reliable source such as the Central Bank of Malaysia, the Federal Reserve of USA, National Bureau of Statistics of China, Office for National Statistics of the UK, National Statistical Office of Thailand and the Urban Redevelopment Authority of Singapore. The property prices were extracted and inputted into graphs for trend analysis.

Trend analysis emerges as a robust methodology for scrutinizing residential property prices owing to its inherent advantages (Mudelsee, 2019). Its protracted time horizon allows for the examination of price fluctuations over extended periods, elucidating enduring market dynamics such as economic cycles and policy impacts. By delving into historical data, trend analysis discerns recurrent patterns and enduring trends, thereby providing stakeholders with invaluable insights for investment decision-making. Moreover, its predictive potential enables forecasting of future price movements based on past trends, aiding investors, developers, and policymakers in strategic planning (Mudelsee, 2019; Kivikunnas, 1998). Comparative analysis facilitated by trend analysis allows for benchmarking performance across diverse market segments, geographical locations, and property types, enhancing decision-making precision. Embracing empirical data and statistical methodologies, trend analysis fosters evidence-based decision-making, promoting transparency and informed action within the housing sector. Furthermore, it serves as a conduit for disseminating findings and insights to diverse stakeholders, facilitating a deeper understanding of market dynamics and fostering collaborative efforts for effective market management.

## **FINDINGS**

### **Conceptual Model and Summary of Review**

In summary, the COVID-19 pandemic has had a profound impact on the real estate market in the US, Asia, and Europe. While the pandemic has led to a surge in demand for residential properties, particularly larger homes with more outdoor space, the commercial real estate market has been negatively impacted by the pandemic, with many businesses being forced to shut down or reduce their operations, leading to a decrease in demand for office and retail spaces.

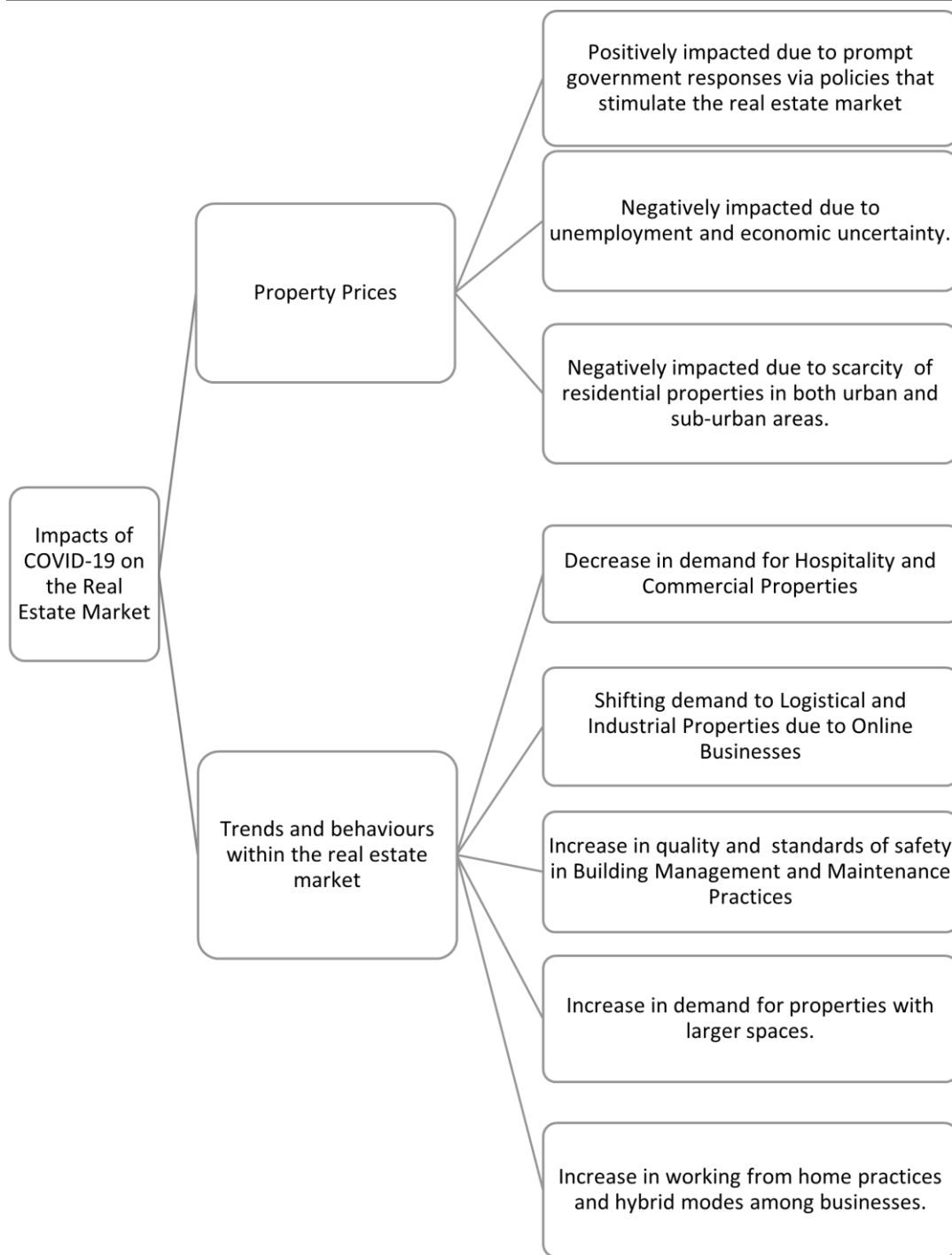


Figure 1: Summary of the Impacts of COVID-19 on the Real Estate Market: Property Prices & Trends

(Source: Authors)

The impacts of COVID-19 on the property prices in selected countries in Europe, Asia and the USA can be summarized and seen as follow:-

Table 1: Summary of the Impacts of COVID-19 on Property Prices in Asia, Europe and the USA

Impact on Real Estate Market – Property Prices	Findings	Author(s)
Property Prices in Beijing	Contrary to popular belief, property prices in Beijing increase despite the COVID-19 pandemic, during and after the pandemic itself.	Knight Frank, 2022

Property Prices in general in China	GDP growth, unemployment, and interest rates have a negative impact on housing prices.	Qian X et al., 2021
Property Prices increase during COVID-19 Pandemic due to government policies in China	The impact of COVID-19 on the real estate market has been largely positive due to government measures to stimulate the housing market, such as cutting interest rates and relaxing lending policies.	Xu et al., 2022; Wei, X., & Han, L., 2021
Property Prices (lower-tier cities) in China	Pandemic found to have a negative impact on the Chinese economy, leading to job losses and economic uncertainty which leads to downward pressure on housing prices in some areas, particularly in the lower-tier cities.	Duan et al., 2021
Property Prices in China and Korea	Despite the pandemic, government-initiated measures have bolstered the real estate market, resulting in a surge in housing prices.	Allan et al., 2021
Property Prices in India	In India, the pandemic has contributed to a decrease in housing prices, driven by economic uncertainty and job losses.	Kumar et al., 2020.
Property Prices in Singapore	In Singapore, the impact of the COVID-19 pandemic on housing prices has been varied.	Ling et al., 2022
Property Prices in the USA	The COVID-19 crisis has led to a decline in housing prices in certain metropolitan areas in the USA.	Li et al., 2020
Condominium Prices in the USA	The COVID-19 pandemic has caused prices of both condominiums and detached houses to decrease in various locations across the USA.	Duca et al., 2021
Property Prices in France & Germany	The pandemic has caused housing prices to rise in countries like Germany and France, as individuals seek larger homes with increased outdoor space.	Mattarocci, G., & Simone, R., 2020
Property Prices in Italy & Spain	In Spain and Italy, the pandemic has resulted in a decrease in housing prices, attributed to economic uncertainty and job losses.	Altig et al., 2020
Property Prices in Germany	The real estate market in Germany has maintained a relatively stable outlook, with housing prices continuing to increase in urban areas during the pandemic.	Fritsche, 2021

(Source: Authors)

From the above, it can be seen that the impacts of COVID-19 on the property prices in various regions of the world can vary. There are various inferences that can be drawn from this result. Firstly, government policies and quick policy responses to the pandemic can benefit the real estate market. This can be seen in China where government measures to stimulate the housing market, such as cutting interest rates and relaxing lending policies had enabled the property market to be stable, at least for the main countries. However, the impacts of these policies may not reach as far as the sub-urban areas (Qian X, 2021). The Chinese and Koreans via their government led measures had successfully stimulate the real estate market, leading to an increase in housing prices despite the pandemic. The increment of housing prices in these two countries are not led by a rise of demand due to scarcity of residential properties, but rather an increase of relaxation on lending policies and reduction of interest rates had led to the rise of the demand. At the same time, the findings of this research also open more doors to whether the impact of government policies such as relaxation of interest rates and lending policies would yield better results in developing countries like China as compared to developed nations like Italy, Spain and the USA where housing prices decline during the COVID-19 pandemic.

Secondly, despite the success of the Chinese government in its policy to stimulate the real estate market which is evident in major cities such as Beijing, the effects of such policies in sub-urban areas and the entire country

may be limited. This showed that government may need to reconsider more precise policies for sub-urban areas as compared to a national nation-wide response. This goes the same for countries like the USA, where there is a variety of different impacts of the pandemic at major cities versus sub-urban areas.

Lastly, it can be seen that the impacts of the COVID-19 pandemic can have different implications on the types of properties within a metropolitan area. Residential properties in different geographical location have different economic forces which can yield a different impact. This can be seen on the increase of housing due to more demand for housing in countries like France and Germany as compared to Italy, Spain, and the USA where demand declined significantly.

The impacts of COVID-19 on the Consumer Behaviours and Trends in selected countries in Europe, Asia and the USA can be summarized and seen as follow:-

Table 2: Summary of the Impacts of COVID-19 on Consumer Behaviours and Trends within the Real Estate Markets in Asia, Europe and the USA

Impact on Real Estate Market – Consumer Behaviours and Trends	Findings	Author(s)
Demand for Larger Homes in Singapore	The pandemic has resulted in an increased demand for spacious homes with larger living areas, as individuals are now spending more time at home due to the prevalence of remote work and the necessity of social distancing measures.	Charoenwong et al., 2020
Decline in Demand for Rental Properties in CBD of Thailand	The pandemic has also led to a decline in demand for rental properties, particularly in the central business district (CBD), as many expats and foreign workers have left the country due to travel restrictions and economic uncertainty	Rattanaprichavej, 2021
Demand for larger homes and Spending more time at Homes	The pandemic has brought about a dual effect on the US real estate market. On one hand, it has triggered a heightened demand for larger homes with increased space, driven by the shift towards remote work and the necessity for social distancing measures, which has led people to spend more time at home.	Akinsomi, 2021
Demand for larger homes with more space	The pandemic has sparked an increased desire for larger homes offering more space, driven by the extended periods individuals are spending at home due to remote work and adherence to social distancing measures.	Tokazhanov et al., 2020
Demand for Sub-urban Homes	Due to the demand, this trend has led to a shortage of inventory and an increase in housing prices in suburban areas, particularly in cities such as New York and San Francisco.	Ng et al., 2022
Sales of single-family homes in suburban and rural areas	Due to COVID-19, there has been a notable rise in the sales of single-family homes in suburban and rural areas across the USA.	Akinsomi, 2021
Decrease in demand for Office & Retail Spaces	In the USA, the pandemic has adversely affected the commercial real estate market, as numerous businesses faced closures or reduced operations, resulting in a decline in demand for office and retail spaces. A report by CBRE indicates that the vacancy rates for office spaces in the US surged by 90 basis points to reach 13.5% in 2020.	Kaushik, M., & Guleria, N. 2020; CBRE, 2021; Uchegara et al., 2020

Negative impact on Commercial Real Estate Market – France & Germany	The pandemic negatively impacted the commercial real estate market, leading to the closure and downsizing of many businesses. There has been a reduced demand for both office and retail spaces.	Tanrivermiş, 2020
Negative impact on Commercial Real Estate Market – UK	In the United Kingdom, the pandemic has resulted in a decrease in demand for commercial real estate, especially in the retail and hospitality sectors.	Balemi et al., 2021
Increase in Demand for Industrial Properties	Pandemic had caused an increased demand for industrial and logistics properties: With the increase in online shopping, there has been an increased demand for industrial and logistics properties.	Hoesli, M., & Malle, R., 2022
Decreased demand for hospitality properties including Hotels	The pandemic has greatly affected the hospitality industry, resulting in a reduced demand for hotels and other properties in the sector.	Ozdemir et al., 2021
Increased focus on health and safety	Building owners and operators have had to implement measures such as increased cleaning, improved air filtration systems, and social distancing protocols to ensure the safety of tenants and visitors	Alsharef et al., 2021
Changes in Architectural designs for safety against the pandemic	Common features supporting single-room self-occupancy encompassed the provision of dedicated space for social distancing, as well as the inclusion of hands-free fixtures in both the bathroom and kitchen areas.	Appau et al. (2023)
More frequent usage of Balconies	The utilization pattern of balconies has shifted, both in terms of how often they are used and the activities they host.	Khalil & Eissa (2022)
Demand for Residential Properties in Germany & France	The pandemic has led to a significant surge in the demand for residential properties, particularly in countries such as Germany and France. People are now looking for larger homes with increased access to outdoor spaces.	Chmielewska et al.,2022

(Source: Author)

This research had shown that a major trend within the real estate markets in Asia, Europe and the USA is that there is a rise of demand for residential properties with larger spaces. This is evident in China, Singapore, US, Germany and France. At the same time, demand for hospitality and commercial properties including office buildings and hotels had been negatively affected by the COVID-19 pandemic consistently among many countries (Ozdemir, 2021; Hoesli, 2022; Balemi, 2021).

There is also a consistent increased of focus on health and safety among building owners and operators to implement technology and procedures to enhance the safety of tenants and visitors. Ultimately, the COVID-19 pandemic had caused an increase in the quality of safety and procedures in building management and maintenance. This is among some of the positive trends that is caused by the COVID-19 pandemic on the real estate industry.

At the same time, it can also be seen where there is a major shift in retail trends, where more business owners prefer to sell their products and services online; leading to an increased demand in industrial and logistical properties as compared to retail properties. Business owners and consumers need to rethink their business strategies and innovate according to this trend in order to compete in the challenging environments.

Lastly, another trend that can be witnessed from the COVID-19 pandemic is that property developers, architects and town planners should be aware on the rising demand for sub-urban and single-family homes. There is a new market focusing on the sub-urban areas which developers can capitalize on as more property buyers and consumers prefer to live in sub-urban areas.

**Trend Analysis on Property Prices in Malaysia, Singapore, China, Thailand, the United States and UK**

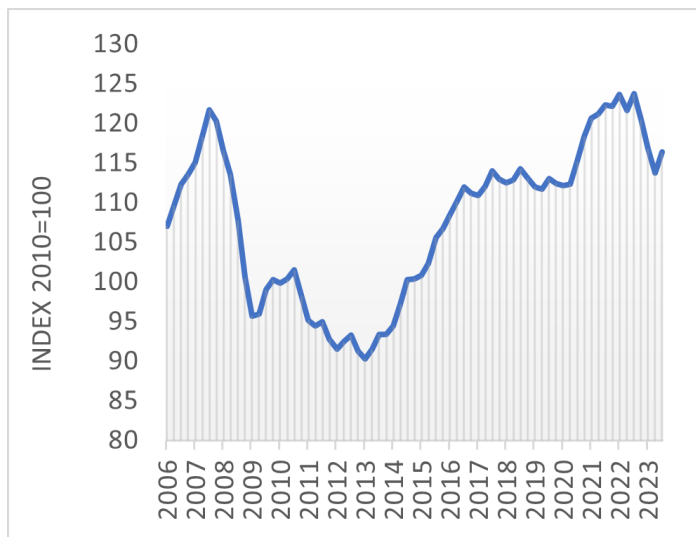


Chart 4: Real Residential Property Prices in United Kingdom (Source: Office for National Statistics of the UK, 2024; Authors).

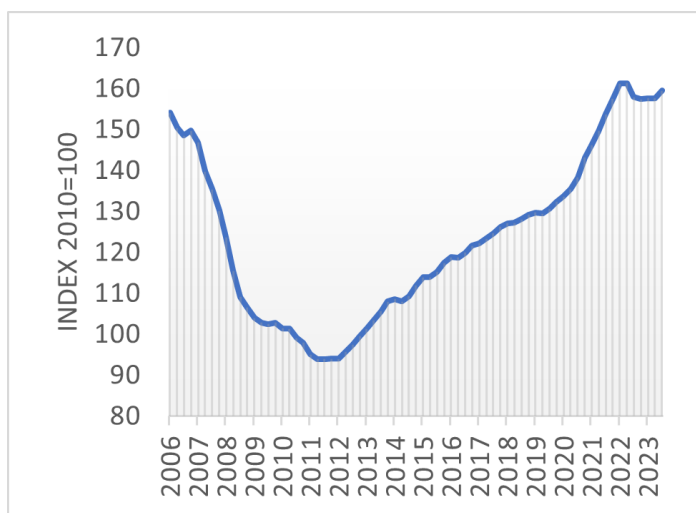


Chart 5: Real Residential Property Prices in United States (Source: Federal Reserve of USA, 2024; Authors).

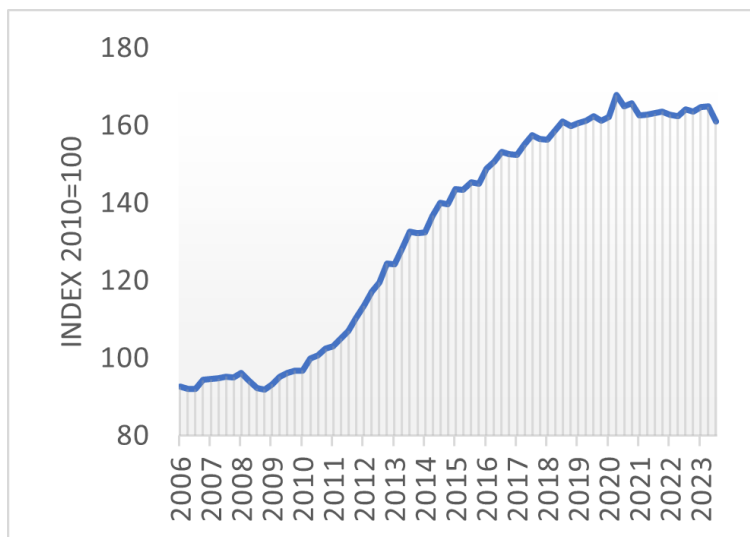


Chart 6: Real Residential Property Prices in Malaysia (Source: Central Bank of Malaysia, 2024; Authors)

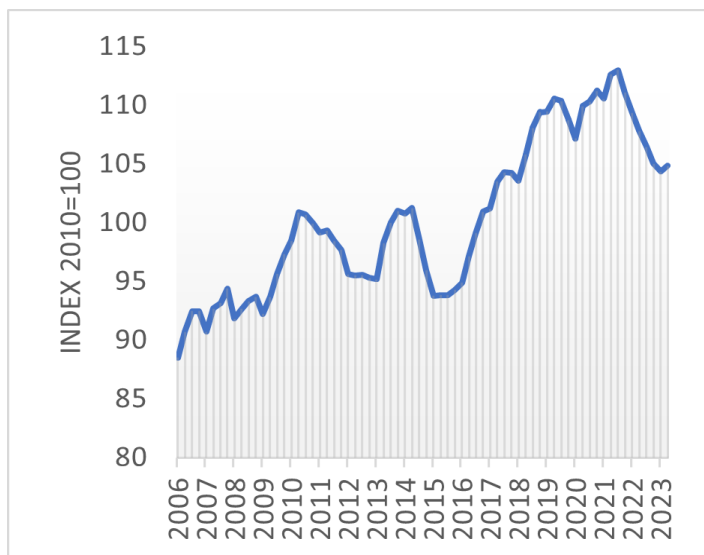


Chart 7: Residential Property Prices in China (Source: National Bureau of Statistics of China, 2024; Authors)

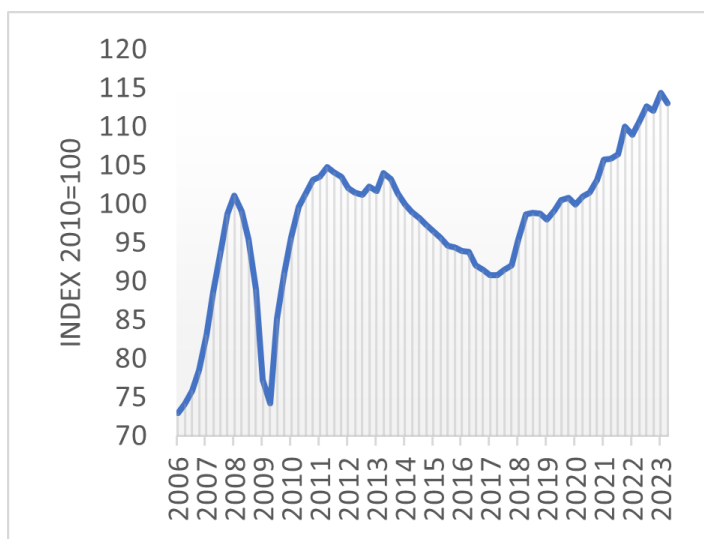


Chart 8: Residential Property Prices in Singapore (Source: Urban Redevelopment Authority of Singapore, 2024; Authors)

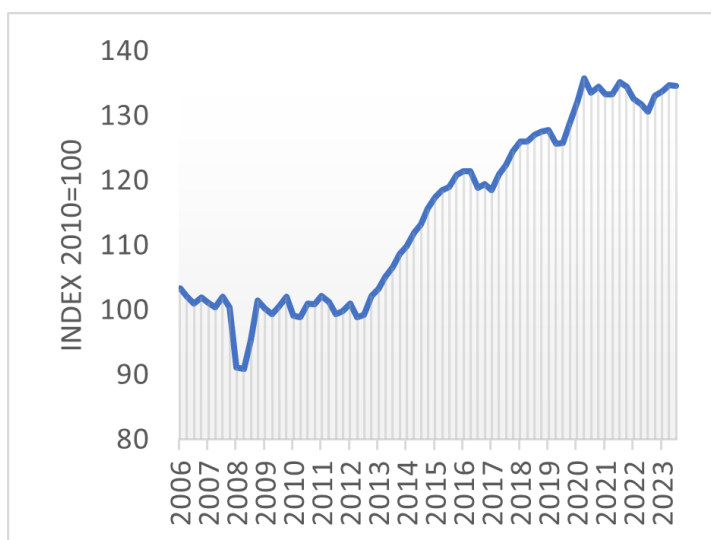


Chart 9: Residential Property Prices in Thailand (Source: Compiled by Author based on data from National Statistical Office of Thailand, 2024.)

## **United Kingdom (UK)**

**Before COVID-19 (Pre-2020):** The UK property market was experiencing moderate growth, with London often at the forefront of price increases. There were concerns about the impact of Brexit, but overall, the market remained relatively stable. **During COVID-19 (2020-2021):** As shown in the above Chart 4, residential property prices rose in 2018 to 2019, but fell during the pandemic from 2019 to 2020 before recovering gradually after 2020. The UK property market faced disruptions during the lockdowns. However, the government implemented measures such as a temporary stamp duty holiday to stimulate activity. Urban areas, especially London, saw a brief decline in demand, but suburban and rural areas experienced increased interest as remote work became more prevalent. **After COVID-19 (Post-2021):** The aftermath of the pandemic was marked by changes in work patterns, influencing housing preferences.

## **United States (US)**

**Before COVID-19 (Pre-2020):** The US real estate market was generally strong, with regional variations. As shown in the above Chart 5, the US residential property prices were surprisingly resilient, rising in 2018 to 2019, but fell just a little during the pandemic from 2019 to 2020 before a consistent rebound after 2020. Urban centres were experiencing growth, and low-interest rates were contributing to increased demand. **During COVID-19 (2020-2021):** Lockdowns and economic uncertainties initially slowed down the real estate market. However, low-interest rates and a shift towards remote work led to increased demand for suburban and rural properties. **After COVID-19 (Post-2021):** The US real estate market showed resilience, with suburban and smaller urban areas witnessing sustained demand. Affordability and lifestyle considerations continued to be key drivers.

## **Malaysia**

**Before COVID-19 (Pre-2020):** Malaysia's residential property prices were rising steadily during the periods of 2018-2019. It's property market faced challenges, including oversupply in certain segments and regions. **During COVID-19 (2020-2021):** The Malaysian property market was affected by the economic downturn, and property prices plummeted from 2019 to 2020. Various measures were introduced to support the sector. Demand shifted towards affordable housing. **After COVID-19 (Post-2021):** Recovery efforts and government initiatives played a role in stabilizing the market, but regional variations persisted. From 2020-2021, the residential property prices faced a strong rebound.

## **China**

**Before COVID-19 (Pre-2020):** China's property market had experienced periods of rapid growth, with some concerns about property bubbles in major cities. However, the downturn was observed in 2019 itself where there was a steep drop in residential property prices. **During COVID-19 (2020-2021):** China's property market saw a worse dip from end of 2019 to early 2020 due to the pandemic's impact. However, the government implemented measures to stabilize the market, and it rebounded relatively quickly. **After COVID-19 (Post-2021):** The Chinese property market remained dynamic, with government policies continuing to influence pricing and activity.

## **Singapore**

**Before COVID-19 (Pre-2020):** Singapore's property market was stable, with measures in place to curb excessive price growth. **During COVID-19 (2020-2021):** The market experienced a dip in property prices, but government interventions and a resilient economy helped prevent significant declines. Demand for certain types of properties, such as private homes, remained relatively robust. **After COVID-19 (Post-2021):** Singapore's property market adapted to changes in buyer preferences and continued to be influenced by government policies aimed at maintaining a stable and sustainable market. It's important to note that the situation in each country is subject to change based on various factors, including economic conditions,



government policies, and global events. For the latest and most accurate information, it's advisable to consult recent real estate reports and market analyses.

### Thailand

Before COVID-19 (Pre-2020): From 2018 to 2019, Thailand's property market had seen observed a growth in its residential property market prices. However, concerns about oversupply were present. During COVID-19 (2020-2021): The Thai property market faced challenges due to the decline in tourism. Domestic demand became crucial for certain segments, and developers adjusted their strategies accordingly. The overall residential property prices took a dip in 2019. After COVID-19 (Post-2021), it can be seen that the Thai residential property prices took a strong rebound.

### Summary

Table 3: Summary of Trend Analyses on COVID-19 pandemic on Global Residential Property Prices

Country	Pre-COVID Pandemic	During-COVID Pandemic	Post-COVID Pandemic
United Kingdom	Moderate Growth 2018-2019	Moderate Decline 2019-2020	Strong Rebound 2020-2021
United States	Moderate Growth 2018-2019	Slight Dip 2019-2020	Moderate Rebound 2020-2021
Malaysia	Moderate Growth 2018-2019	Slight Dip 2019-2020	Moderate Rebound 2020-2021
China	Strong Growth 2018-2019	Strong Decline 2019-2020	Strong Rebound 2020-2021
Singapore	Moderate Decline Mid 2018-Early 2019	Fluctuations (Moderate Growth Early 2019 – Mid 2019; Moderate Decline Mid 2019- Mid 2020)	Fluctuations (Moderate Decline Mid 2020- Mid 2021; Moderate Rebound mid 2020 – 2021)
Thailand	Moderate Decline Mid 2018-Early 2019	Fluctuations (Moderate Growth Early 2019 – Mid 2019; Moderate Decline Mid 2019- Mid 2020)	Fluctuations (Moderate Decline Mid 2020- Mid 2021; Moderate Rebound mid 2020 – 2021)

China faces the most rapid and sharp of both decline and rebound when it comes to the residential property prices during the pandemic. At the same time, it can be seen that the US residential property prices is more resilient as compared to the other countries. Lastly, this study also found that the both Thailand and Singapore may feel the impacts of COVID-19 pandemic much earlier as compared to Malaysia and other countries.

### CONCLUSION

In conclusion, this paper has showed many important findings on how the COVID-19 pandemic impacted the real estate market globally in countries located in Europe, Asia and the United States. In terms of property prices, this paper also reveals the mechanisms on how COVID-19 pandemic can be both positive and negative on the property prices. As seen in the cases of China and Korea, prompt government responses via macroeconomic surveillance and implementation of policies to stimulate the real estate market had manage to stimulate and protect the real estate market had caused property prices to rise positively. This stresses the

importance of macroeconomic surveillance and prudent policies that should be implemented to protect and stimulate the real estate market in the event of a global pandemic induced-recession. At the same time, as seen in the cases of Italy and Spain, recession can cause economic uncertainty and job losses which will lead to a reduction of property prices. Governments and regulators may need to consider policies aimed at tackling unemployment such as guaranteed wage subsidies, job creation policies and unemployment insurance that can assist with the stimulation of the real estate market and restore public confidence. In terms of trends and behaviours within the real estate market, this research had shown there is a rise of demand for residential properties with larger spaces. This is evident in China, Singapore, US, Germany and France. At the same time, demand for hospitality and commercial properties including office buildings and hotels had been negatively affected by the COVID-19 pandemic consistently among many countries. The COVID-19 pandemic had also caused a positive increase in the quality of safety and procedures in building management and maintenance. There are also major shifts in retail and commercial properties, where more business owners prefer to sell their products and services online and working from home; leading to an increased demand in industrial and logistical properties as compared to retail and commercial properties. There is also rising demand for sub-urban and single-family homes and the emergence of a new market focusing on the sub-urban areas which developers can capitalize on as more property buyers and consumers prefer to live in sub-urban areas with larger spaces.

Lastly, the trend analyses on residential property prices in the UK, US, Malaysia, China, Singapore and Thailand offers a global view on the impacts of the COVID-19 pandemic on the real estate market. All of the residential property markets faced a decline in residential property prices during the global pandemic with different periods, where Singapore and Thailand may had felt the impact earlier as compared to other countries in this study. At the same time, the US residential property prices had proved to be more resilient as compared to the other countries in this study. China has both the sharpest decline and strong rebound in residential property prices as compared to the other countries in this study.

Governments, regulators, business owners and property developers need to rethink their business strategies and innovate according to this trend in order to compete in the challenging environments.

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## REFERENCES

1. Akinsomi, O. (2021). How resilient are REITs to a pandemic? The COVID-19 effect. *Journal of Property Investment & Finance*, 39(1), 19-24.
2. Aliefendioğlu, Y. T. (2022). House price index (HPI) and Covid-19 pandemic shocks: evidence from Turkey and Kazakhstan. *International Journal of Housing Markets and Analysis*, 15(1), 108-125.
3. Allan, R. L. (2021). The COVID-19 pandemic and commercial property rent dynamics. *Journal of Risk and Financial Management*, 14(8), 360.
4. Alsharif, A. B. (2021). Early impacts of the COVID-19 pandemic on the United States construction industry. *International journal of environmental research and public health*, 18(4), 1559.
5. Alsharif, A. B. (2021). Early impacts of the COVID-19 pandemic on the United States construction industry. *International journal of environmental research and public health*, 8(4), 1559.
6. Alsharif, A. B. (2021). Early impacts of the COVID-19 pandemic on the United States construction industry. *International journal of environmental research and public health*, 18(4), 1559.
7. Altig, D. B. (2020). Economic uncertainty before and during the COVID-19 pandemic. *Journal of Public Economics*, 191, 104274.
8. Alwan, S. Y. (2023). Sustainable and resilient e-commerce under COVID-19 pandemic: a hybrid grey decision-making approach. *Environmental Science and Pollution Research*, 30(16), 47328-47.

9. Awada, M. L.-G. (2021). Working from home during the COVID-19 pandemic: Impact on office worker productivity and work experience. *Work*, 69(4), 1171-1189.
10. Balemi, N. F. (2021). COVID-19's impact on real estate markets: review and outlook. *Financial Markets and Portfolio Management*, 1-19.
11. Benjamin Liu, Allen Huang, Brett. (2013). The impact of the GST on mortgage pricing of Australian credit unions: An empirical analysis. *Accounting Research Journal*.
12. Binh Tran-Nam, C. E. (2000). Tax Compliance Costs: Research Methodology and Empirical Evidence from Australia. *National Tax Journal*, 229-252.
13. Boesel, M. C. (2021). Housing preferences during the pandemic: effect on home price, rent, and inflation measurement. *Business Economics*, 56(4), 200-211.
14. Bolisani, E. S. (2020). Working from home during COVID-19 pandemic: Lessons learned and issues. . *Management & Marketing. Challenges for the Knowledge Society*, 15(s1), 458-476.
15. Breen J., B.-S. S. (2002). The Impact of the Introduction of the GST on Small Businesses in Australia. *Asian Review of Accounting*.
16. Chai, W.-C., Tham, K.-W., Cheng, C.T., Chong, K.W. and Yeoh, K.Y. (2024), "Impacts of macroeconomic factors during COVID-19 pandemic on property loan impairments and overhang: case study of Malaysia", *International Journal of Housing Markets and Analysis*
17. Charoenwong, B. K. (2020). Social connections with COVID-19-affected areas increase compliance with mobility restrictions. *Science advances, eabc3054.*, 6(47).
18. Chmielewska, A. C.-B. (2022). Residential real estate investors' motives under pandemic conditions. *Cities*, 128, 103801.
19. De Toro, P. N. (2021). Real estate market responses to the COVID-19 crisis: which prospects for the metropolitan area of Naples (Italy)? *Urban Science*, 5(1), 23.
20. Delardas, O. K. (2022). Socio-Economic Impacts and Challenges of the Coronavirus Pandemic (COVID-19): An Updated Review. *Sustainability*, 14(15), 9699.
21. Duan, H. B. (2021). The hit of the novel coronavirus outbreak to China's economy. *China Economic Review*, 67, 101606.
22. Duca, J. H. (2021). The resilience and realignment of house prices in the era of Covid-19. *Journal of European Real Estate Research*, Vol 14, No 3, pp. 421-431. .
23. Duca, J. V. (2021). The resilience and realignment of house prices in the era of Covid-19. *Journal of European Real Estate Research*, 14(3), 421-431.
24. Early impacts of the COVID-19 pandemic on the United States construction industry. (2021). *International journal of environmental research and public health*, 18(4), 1559.
25. Elrayies, G. M. (2022). Prophylactic Architecture: Formulating the Concept of Pandemic-Resilient Homes. *Buildings*, 12(7), 927.
26. Ern Chen Loo, C. E. (2010). Challenges in Understanding Compliance Behaviour of Taxpayers in Malaysia. *Asian Journal of Business and Accounting*, 145-161.
27. ESRB. (2018, November 26). *ESRB publishes report on macroprudential provisions, measures and instruments for insurance*. Retrieved December 15, 2018, from European Systemic Risk Board: <https://www.esrb.europa.eu/news/pr/date/2018/html/esrb.pr181126.en.html>
28. European Systemic Risk Board. (2017). *Resolving Non-Performing Loans in European Union*. ESRB.
29. Federal Bank of St Louis. (2023). *The Impact of COVID-19 on the Residential Real Estate Market*. Retrieved from Federal Bank of St Louis: <https://www.stlouisfed.org/publications/regional-economist/fourth-quarter-2020/impact-covid-residential-real-estate-market>
30. Foo CH. (2022, Oct 3). *Will the Malaysian residential property market get healthier post-pandemic?* Retrieved from Iproperty: <https://www.iproperty.com.my/property-insights/malaysian-residential-property-market-post-pandemic-80476>
31. Fritsche, C. (2021). The expected impact of COVID-19 on the housing market. *Streiflicht VWL.*, No. 5.
32. Gupta, A. M. (2022). Work from home and the office real estate apocalypse. *National Bureau of Economic Research*, (No. w30526).
33. He, Q., Liu, J., Wang, S., & Yu, J. (2020). The impact of COVID-19 on
34. stock markets. *Economic and Political Studies*, 8(3), 275-288.

35. Hensher, D. A. (2023). The impact of COVID-19 and working from home on the workspace retained at the main location office space and the future use of satellite offices. *Transport Policy*, 130, 184-195.
36. Hoesli M., & M. (2022). Commercial real estate prices and COVID-19. *Journal of European Real Estate Research*, 15(2), 295-306.
37. Hoesli M., & M. (2022). Commercial real estate prices and COVID-19. *Journal of European Real Estate Research*, 15(2), 295-306.
38. Hoesli, M. &. (2022.). Commercial real estate prices and COVID-19. *Journal of European Real Estate Research*, 15(2), 295-306.
39. Jahan, N. &. (2021). Unparalleled volatility in sector-wise return in the chittagong stock exchange: a covid-19 perspective. . *Asia-Pacific Management Accounting Journal (APMAJ)*, 16(3), 55-83.
40. Jiang, J. P. (2021). The impact of the COVID-19 on economic sustainability—a case study of fluctuation in stock prices for China and South Korea. *Sustainability*, 13(12), 6642.
41. Jovanović-Milenković, M. Đ. (2020). The impact of COVID-19 pandemic on the real estate market development projects. *European Project Management Journal*, 36-49.
42. Kania, K. &. (2022). The Impact of Covid-19 on the Use of Modern Technologies By Real Estate Brokers. *Real Estate Management and Valuation*, 30(2), 73-83.
43. Kartal, M. T. (2023). Housing prices in emerging countries during COVID-19: evidence from Turkey. *International Journal of Housing Markets and Analysis*, 598-615.
44. Kaushik, M. &. (2020). The impact of pandemic COVID-19 in workplace. *European Journal of Business and Management*, 12(15), 1-10.
45. Kivikunnas, S. (1998, September). Overview of process trend analysis methods and applications. In ERUDIT workshop on applications in pulp and paper industry (pp. 395-408).
46. Kumar, S. M. (2020). Social economic impact of COVID-19 outbreak in India. *International Journal of Pervasive Computing and Communications*, 16(4), 309-319.
47. Kuen-wei, T., Said, R., & Adnan, Y. M. (2021). Interruptive time series
48. analysis of GST upon non-performing non-housing property loans: Case study from Malaysia. *Asia-Pacific Management Accounting Journal (APMAJ)*, 16(1), 35-58.
49. KW Tham, R. S. (2022). Dynamic implications of GDP, interest rates, taxes, income, foreign direct investments, housing prices on property NPLs. *International Journal of Housing Markets and Analysis* , 15 (5), 1122-1144 .
50. Lim, T. C. (2021). Effectiveness of the COVID-19 economic stimulus packages: Viewpoints from Malaysian young entrepreneurs. . *Studies of Applied Economics*, 39(4).
51. Ling, F. Y. (2022). Impact of COVID-19 pandemic on demand, output, and outcomes of construction projects in Singapore. *Journal of Management in Engineering*, 04021097., 38(2).
52. Malaysian GST Act (2014).
53. Mattarocci, G. &. (2020). Real Estate and the Effects of the COVID-19 Pandemic in Europe. *A New World Post COVID-19*, 177.
54. Mazur, M., Dang, M., & Vega, M. (2021). COVID-19 and the march 2020
55. stock market crash. Evidence from S&P1500. *Finance research letters*, 38, 101690.
56. Megahed, N. A. (2020). Antivirus-built environment: Lessons learned from Covid-19 pandemic. *Sustainable cities and society*, 61, 102350.
57. Mehta, S. S. (2020). The new consumer behaviour paradigm amid COVID-19: permanent or transient?. *Journal of health management*, 22(2), 291-301.
58. Mou, J. (2020, July). Research on the Impact of COVID19 on Global Economy. *In IOP Conference Series: Earth and Environmental Science (Vol. 546, No. 3)*. IOP Publishing., p. 032043.
59. Mudelsee, M. (2019). Trend analysis of climate time series: A review of methods. *Earth-science reviews*, 190, 310-322.
60. Muhyi, M. M. (2021). Literature Review: The Effects of Covid-19 Pandemic-Driven Home Behavior in Housing Preference. *Smart City*, 1(1), 2.
61. Nanda, A. X. (2021). How would the COVID-19 pandemic reshape retail real estate and high streets through acceleration of E-commerce and digitalization? *Journal of Urban Management*, 10(2), 110-124.

62. Naor, M. P. (2022). The impact of COVID-19 on office space utilization and real-estate: a case study about teleworking in Israel as new normal. *Journal of Facilities Management*, 20(1), 32-58.
63. Ng, E. A. (2022). Are Settlement Patterns Changing in the United States as We Emerge from the COVID-19 Pandemic?. *Cityscape*, 24(3), 153-180.
64. Onyeaka, H. A.-S.-G. (2021). COVID-19 pandemic: A review of the global lockdown and its far-reaching effects. *Science progress*, 104(2), 00368504211019854.
65. Ozdemir, O. D. (2021). Quantifying the economic impact of COVID-19 on the US hotel industry: Examination of hotel segments and operational structures. *Tourism Management Perspectives*, 39, 100864.
66. Ozdemir, O. D. (2021). Quantifying the economic impact of COVID-19 on the US hotel industry: Examination of hotel segments and operational structures. *Tourism Management Perspectives*, 39, 100864.
67. Pusarla, H. R. (2020). Impact of COVID-19 on Real Estate Sector in India. *PuJ-GIBS*, Volume12, (1).
68. Qian, X. Q. (2021). The impact of COVID-19 on housing price: Evidence from China. *Finance Research Letters*, 43, 101944.
69. Rattanaprichavej, N. (2021). Impact of COVID-19 Pandemic and Crisis Management Strategies on Real Estate Agencies. *Contemporary Management Research*, 17(4), 303-332.
70. Redfin. (2021, March 1). *One Year Later: The Coronavirus Pandemic's Impact on the U.S. Housing Market In 12 Charts*. Retrieved from Redfin News: <https://www.redfin.com/news/coronavirus-pandemic-real-estate-impact-charts/>
71. Roy, S. (2020). Economic impact of Covid-19 pandemic. *A preprint*, 1-29.
72. Rupani, P. F. (2020). Coronavirus pandemic (COVID-19) and its natural environmental impacts. *International Journal of Environmental Science and Technology*, 17, 4655-4666.
73. Samargandi, N. (2023). COVID-19 economic impact and Saudi stimulus
74. package effectiveness. *Asia-Pacific Management Accounting Journal (APMAJ)*, 18(1), 65-84.
75. Sandford. (1995). The rise and rise of tax compliance costs. In C. Sandford (Ed.), *Tax compliance costs. The Institute for Fiscal Studies, Bath, UK*.
76. Santos, J. R. (2022). Uncertainty Analysis of Business Interruption Losses in the Philippines Due to the COVID-19 Pandemic. *Economies*, 10(8), 202.
77. Shen, Z. M. (2023). Strengthening supply chain resilience during COVID-19: A case study of JD. com. *Journal of Operations Management*, 69(3), 359-383.
78. Tanrıvermiş, H. (2020). Possible impacts of COVID-19 outbreak on real estate sector and possible changes to adopt: A situation analysis and general assessment on Turkish perspective. *Journal of Urban Management*, 9(3), 263-269.
79. Tham, K. W., Said, R., & Mohd Adnan, Y. (2021). Interruptive time series analysis of GST upon non-performing non-housing property loans: case study from Malaysia/Tham Kuen-Wei, Rosli Said and Yasmin Mohd Adnan. *Asia-Pacific Management Accounting Journal*, 16(1), 35-58.
80. Tham, K. W., Said, R., & Adnan, Y. (2021). The Dynamic Relationship Between Inflation and Non-Performing Property Loans in Malaysia. *Journal of Surveying, Construction and Property*, 12(1), 36
81. Tham, K.-W., Said, R. and Mohd Adnan, Y. (2022), "Dynamic implications of GDP, interest rates, taxes, income, foreign direct investments, housing prices on property NPLs", *International Journal of Housing Markets and Analysis*, Vol. 15 No. 5, pp. 1122-1144. <https://doi.org/10.1108/IJHMA-07-2021-0078>
82. The Nassau Institute. (2013). *The Nassau Institute*. Retrieved from The Economic Consequences of the Value-Added: <http://www.nassauinstitute.org/files/VATEconomicConsequencesBahamas.pdf>
83. Tokazhanov, G. T. (2020). How is COVID-19 experience transforming sustainability requirements of residential buildings? *A review. Sustainability*, 12(20), 8732.
84. *UAE Government Official Website*. (2018). Retrieved December 12, 2018, from Value Added Tax of the UAE: <https://government.ae/en/information-and-services/finance-and-investment/taxation/valueaddedtaxvat>
85. Uchegara, I. H.-A. (2020). Impacts and risk management of COVID-19 pandemic on real estate supply chain. *International journal of real estate studies*, 14(S1), 41-53.

86. Wang, B. (2021). How does COVID-19 affect house prices? A cross-city analysis. *Journal of Risk and Financial Management*, 14(2), 47.
87. Wei, X. &. (2021). The impact of COVID-19 pandemic on transmission of monetary policy to financial markets. *International Review of Financial Analysis*, 74, 101705.
88. Wei, T. K., & Said, R. (2021). Non-Performing Property Loans and its
89. Origination in the Real Estate Finance System: Case Study of Malaysia. *International Journal of Property Sciences* (E-ISSN: 2229-8568), 11(1), 35-59.
90. Xu, W. L. (2022). The impact of COVID-19 on China's capital market and major industry sectors. *Annals of Data Science*, 9(5), 983-1007.
91. Yu, Z. R. (2021). Disruption in global supply chain and socio-economic shocks: a lesson from COVID-19 for sustainable production and consumption. *Operations Management Research*, 1-16.
92. YYC Advisors. (2018). Retrieved from Loanstreet.
93. Zwanka, R. J. (2021). COVID-19 generation: A conceptual framework of the consumer behavioral shifts to be caused by the COVID-19 pandemic. *Journal of International Consumer Marketing*, 33(1), 58-67.