A Review on the Impacts of Macroeconomic Factors on Business Values of Property Developers: Case Study of Malaysia

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.90300171

Received: 27 February 2025; Accepted: 03 March 2025; Published: 05 April 2025

ABSTRACT

The COVID-19 pandemic significantly impacted the business value of property developers worldwide, including Malaysia. This study reviews the effect of the pandemic on the price-to-earnings (PE) ratio of property developers, focusing on the top five developers in Malaysia, whose collective market capitalization represents 30% of the total listed property developers in the country. Statistical analysis indicates that the PE ratio of these developers experienced a drastic decline during the pandemic, reflecting the economic uncertainty, reduced consumer demand, and disruptions in the real estate sector. However, as the market adapted to new conditions, government interventions were introduced, and economic recovery gained momentum, the PE ratios rebounded post-pandemic, signaling renewed investor confidence and market stabilization. The findings align with global trends in stock market volatility and economic downturns, underscoring the real estate market's vulnerability to macroeconomic fluctuations. This review contributes to a deeper understanding of the pandemic's impact on business valuation within the property sector and provides insights for future investment strategies and policy considerations.

INTRODUCTION TO MACROECONOMIC FACTORS, REAL ESTATE FINANCE SYSTEM AND ECONOMIC STABILITY

A robust and good real estate finance system is crucial to the nation's economy and more specifically the sustainability of its financial system. In Malaysia, the Real Estate Finance System in Malaysia involves three sub-markets namely the primary mortgage market, the secondary mortgage market and the capital market (Tham, et al, 2021; Said, et al, 2015). The three submarkets are dependent and interact with each other in delivering the successful operation of the real estate finance system.

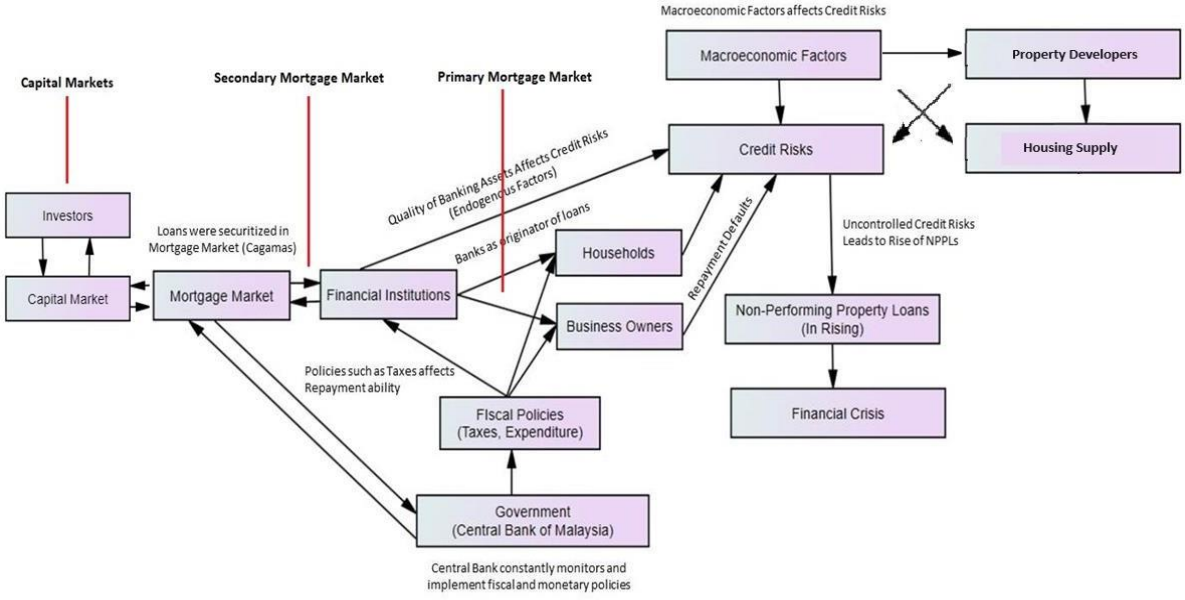

Figure 0.1: Real Estate Finance System, extended from Tham et al., 2021

The above Figure 1.1 shows the dynamic flow of funds in the real estate finance system, which is part of any country's economy. Within the real estate finance system, there exists the primary mortgage market, the secondary mortgage market and the capital markets (Tham et al., 2021).

Commercial banks in the primary mortgage market accept deposits in savings and may also borrow funds from other sources (Glickman, 2014; Abel, 2005). These funds are then advanced to individuals, firms, and governments. The significant amount of financing required for real estate development and investment, the illiquid nature of properties, high risks, and the fixed location of assets make it difficult for financial institutions to finance real estate while catering to both firms (property developers) and consumer demand (Glickman, 2014; Abel, 2005). To address these challenges, most countries have developed two submarkets within the real estate finance system: the primary and secondary mortgage markets (Claurentine, 2003; Watanabe, 1998).

The primary mortgage market is where borrowers and mortgage originators negotiate terms and execute mortgage transactions (Claurentine, 2003; Watanabe, 1998). An example of this is when a commercial bank or mortgage company provides a loan to a property purchaser, forming part of the primary mortgage market's activity. Mortgage brokers, mortgage bankers, credit unions, and banks all operate within this market. After origination, most mortgages are sold in the secondary mortgage market, where they often become part of mortgage-backed securities (MBS), asset-backed securities (ABS), or collateralized debt obligations (CDOs).

The primary mortgage market consists of primary lenders, with financial institutions and real estate loan providers operating under the regulation of their respective countries. For example, in the United States, financial institutions are regulated by the Federal Reserve System (Meltzer, 2010), and their deposits are insured by the Federal Deposit Insurance Corporation (FDIC). These institutions play a crucial role in providing commercial real estate loans, particularly for acquiring, developing, and constructing properties. In addition to commercial banks and financial institutions, specialized real estate lending institutions exist. For instance, in Korea, property loans were initially provided by the Korea Housing Bank and the National Housing Fund, both government institutions. Commercial banks entered the Korean housing finance system in 1996, followed by installment finance companies in 1997 (Bank of Korea, 2013). The privatization of the Korean Housing Bank in 1999 facilitated the development of the secondary market by increasing competition among mortgage providers (Bank of Korea, 2013).

Similarly, in Japan, the Japan Housing Finance Agency (JHF) supports securitization efforts to facilitate the provision of fixed-rate housing loans by private financial institutions. It also offers a housing loan insurance service to promote the smooth availability of private housing loans and a loan origination service for policy-driven projects that the private sector struggles to finance (Sakakibara, 2004). Before the Asian financial crisis of 1997, the Japanese Government's Housing and Loan Corporation was the largest mortgage institution in 1996 (Sakakibara, 2004). In Canada, the Canadian Mortgage and Housing Corporation (CMHC) was established in 1946 to assist war veterans in securing housing (Treasury Board of Canada, 2007). It later expanded its mandate to support all Canadians by providing loans and affordable housing. The CMHC was also authorized to guarantee timely payments for pools of insured federal loans. These financial institutions and lenders play a key role in the primary mortgage market.

Primary lenders typically retain the loans they originate as part of their portfolio and service them throughout the loan's duration (Glickman, 2014). Claurentine (2003) identified several advantages of the primary mortgage market for property loan borrowers: (i) Lower closing costs: Primary lenders are often locally owned, community banks, allowing them to handle paperwork and documentation in-house, reducing costs associated with processing loans in the secondary mortgage market. (ii) Flexibility: Locally owned banks provide borrowers with direct access to decision-makers, which is uncommon in national banks. This increases flexibility for borrowers with unique financial situations. (iii) Lower upfront payments: The "margin of financing," or upfront payment, is typically lower, enabling developers and consumers to maintain better cash flow and affordability for real estate developments and properties (Clauretie & Sirmans, 2003).

Despite its benefits, the primary mortgage market has several challenges, leading to the establishment of the secondary mortgage market. Before its creation, only large banks had sufficient funds to issue long-term loans,

typically for 15 to 30 years (Lea, 1999). During financial crises, the supply of mortgage funds is highly sensitive to macroeconomic conditions, limiting the availability of new mortgages and project financing (Clugston, 2009). This constraint often results in high lending costs due to rising interest rates (Clauretie & Sirmans, 2003), making it more difficult for potential homebuyers to secure mortgage loans. To mitigate these issues, the real estate finance system evolved to include the secondary mortgage market through the development of special purpose vehicles (SPVs), complementing the primary mortgage market (Clauretie & Sirmans, 2003). The creation of the secondary mortgage market and SPVs enables financial institutions to sell mortgage loans and raise funds even before loan maturity (Said, 2015; Glickman, 2014; Abel, 2005).

Introduction to the 2020-2021 COVID-19 Pandemic

It is widely accepted by the scientific community where the first cluster of pneumonia of unknown origin was identified in Wuhan, China, in December 2019 (Spiteri et al., 2020). The World Health Organization then declares COVID-19 as a global pandemic in March 2020. Then, stock markets around the world started to recover in 2021 to 2022, showing a recovery period including in countries like Malaysia and Singapore.

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 (Chai et al., 2024; Tham et al., 2022; 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.

It is widely accepted by the scientific community where the first cluster of pneumonia of unknown origin was identified in Wuhan, China, in December 2019 (Spiteri et al., 2020). The World Health Organization then declares COVID-19 as a global pandemic in March 2020. Then, stock markets around the world started to recover in 2021 to 2022, showing a recovery period including in countries like Malaysia (Thomson Reuters, 2023). In Malaysia, the Malaysian government has instructed banks to implement a bank moratorium where debtors such as home purchasers, firms, industrial property owners and all property loan borrowers were exempted from servicing their loans without any penalty for a period of six months starting from 1 April 2021 (Daim, 2020). This moratorium applies to all types of property loans, including residential, agricultural, commercial and industrial properties. All these were implemented from 2021 to 2022, which are within the scope of this study.

As such, the scope of this study focuses on the period from 2018 to 2022. Using the five-year dataset from 2018 to 2022 aligns with the critical timeframe of the COVID-19 pandemic and such observation allows for a comprehensive analysis of economic recovery, enhances statistical significance, and facilitates the identification of trends and patterns crucial for understanding the impact of macroeconomic conditions on property loan impairments and overhang in Malaysia.

Earnings Multiplier (P/E Ratio Method of Valuation)

The price-to-earnings (P/E) ratio is a common and most widely used method in which the market value of the business is calculated by multiplying its earnings by a suitable multiplier. The multiplier is often based on industry benchmarks. This is the main method that will be the focus of this thesis.

Earnings-based methods, such as the Price-to-Earnings (P/E) ratio and Discounted Cash Flow (DCF), consider a company's future earnings potential. This is crucial for investors and buyers looking to understand the long-term value of a business. These methods focus on the expected future cash flows, making them more forward-looking than asset-based methods, which rely on historical values. Earnings-based methods are applicable to a wide range of businesses, including those with significant intangible assets, as they take into account the overall profitability and cash-generating capabilities of the business. The P/E ratio, in particular, reflects the market's perception of a company. A high P/E ratio may indicate high growth expectations, while a low P/E ratio may suggest undervaluation. DCF allows for the consideration of different growth rates, discount rates, and cash flow scenarios, providing flexibility in capturing the nuances of a company's unique circumstances. DCF explicitly incorporates a discount rate, which reflects the risk associated with the business. Changes in risk perception can be factored into the valuation. Lastly, earnings-based methods are widely used for valuing publicly traded companies, making them familiar to investors and analysts in the financial markets.

However, earnings-based methods heavily rely on accurate and reliable future cash flow projections. Predicting future performance can be challenging and is subject to uncertainties. DCF, in particular, is highly sensitive to the assumptions made regarding discount rates, growth rates, and terminal values. Small changes in these inputs can significantly impact the valuation. The determination of the discount rate in DCF involves subjective judgment. Different analysts may use different rates, leading to variations in valuations. Earnings-based methods may not be suitable for companies with negative or inconsistent earnings, as they heavily depend on positive cash flows to derive a meaningful valuation. The P/E ratio can be influenced by market volatility, leading to fluctuations in the valuation that may not necessarily reflect changes in the underlying business fundamentals. Industries with significant research and development costs or heavy capital expenditures may find earnings-based methods less applicable, as these expenses can impact short-term earnings but contribute to long-term value. Lastly, startups, which often have negative earnings in their early stages, may not be well-suited for P/E ratio-based valuations.

Determinants of Macroeconomic Conditions on Business Valuation

Macroeconomic conditions play a crucial role in influencing business valuations. The overall economic environment can impact various factors that are integral to the financial performance and perceived risk of a business. Studies had shown that macroeconomics plays an essential role in economic activities as well as brings an effect to stock market performance (Setiawan, 2020). Macroeconomic conditions had been shown to affect business value of listed companies throughout the world (Rahman, Macroeconomic determinants of Malaysian stock market, 2009; Kabeer, 2017; Oriwo, 2012; Chauque, 2018; Worlu, 2017; Patel, 2012; Menike, 2015; Beh, 2020)

Country	Sample	Findings	Author
Malaysia	Stock Market in Malaysia 1998 to 2012	Macroeconomic conditions has impacted the stock performance / business values of public listed companies in Malaysia	Chauque, D. F. F., & Rayappan, P. A. (2018)
Malaysia	Stock Market in Malaysia 1986 to 2008	Macroeconomic conditions such as interest rate, exchange rate, reserves and industrial production index affect stock market significantly.	Rahman et al. (2009)
Africa	Stock Market in Africa 2000 to 2015	Macroeconomic conditions affect business value in Africa	Worlu, C. N., & Omodero, C. O. (2017).

India	Stock Market in India from 1991 to 2011.	The study analyzes the impact of various macroeconomic factors on the Indian Stock Market from January 1991 to December 2011. Using statistical tests, it identifies Interest Rate as a non-stationary variable, while Sensex, Nifty, Exchange Rate, Industrial Production, Gold Price, Silver Price, and Oil Price are stationary. The findings indicate long-run relationships between macroeconomic variables and stock market indices.	Patel (2012)
Nigeria	Stock Market in Nigeria from 1984 to 2007	Macroeconomic conditions involving exchange rate, inflation rate, money supply, and real output (GDP) shown to have impacts on market performance in the long run.	Maku et al. (2010)
United Kingdom & Sri Lanka	Colombo Stock Exchange & the London Stock Exchange, in year 2017.	Inflation, GDP and exchange rate remain leading predictors of stock returns variation in both Colombo Stock Exchange (CSE) and LSE whereas unemployment and Foreign Portfolio Investments (FPI) become statistically significant only in CSE.	Menike, et al. (2015)
China & SAARC	Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, China and Sri Lanka	Inflation has insignificant (negative) influences on stock market return in Bangladesh. And in Pakistan, foreign exchange and inflation have significant (negative) influences while FDI has insignificant (positive) influences on stock market return. In Sri Lanka significant (positive) influences by foreign exchange while FDI and inflation have significant (negative) influences on stock market return.	Kabeer, M. A. (2017)
US & China	Dow Jones Industrial Average Index, NASDAQ Composite Index and S&P 500 Index, Shanghai Composite Index (SSE) and Shenzhen Stock Exchange Index (SZSE)	identified consumer price index, export, interest rates, money supply, real effective exchange rates, total reserves, gold price and crude oil price as potential determinants of the stock returns.	Beh, et al. (2020)

Changes in interest rates affect the discount rates used in valuation models (Thornton, 1986). Higher interest rates can increase discount rates, leading to lower present values in discounted cash flow (DCF) analyses. Lower interest rates may have the opposite effect.

Macroeconomic conditions such as inflation can impact a company's real growth prospects. During inflationary periods, nominal revenue growth may be higher, but real growth (adjusted for inflation) may be lower. Valuations should account for both nominal and real growth rates as businesses are often correlated with the overall economic growth rate. A growing economy can positively impact a company's revenue and earnings, contributing to higher valuations (Chen, 2010). Conversely, economic downturns may lead to lower growth expectations and valuations.

High unemployment rates can lead to reduced consumer spending, impacting businesses dependent on discretionary spending (ALPER, 2018). In contrast, low unemployment rates can drive consumer confidence and boost demand, positively affecting business valuations.

Major global events, such as financial crises, geopolitical tensions, or pandemics, can influence market sentiment and risk perceptions (Yatsenko et al., 2018). This can result in market volatility and impact business valuations, especially for companies with global exposure. This is especially such as the COVID-19 pandemic that affected businesses worldwide.

Macroeconomic conditions serve as a backdrop for business valuations, influencing growth expectations, risk perceptions, and financial parameters. Research into such impacts on the business valuations are important in order to understand the broader economic context and its potential impacts on the specific factors driving a company's value. Additionally, it is also crucial for research to assess the valuation models in light of changing economic conditions for more accurate and relevant business valuations.

Performance of the Property Developers in Malaysia

As at January 2023, there are 162 listed companies in Malaysia that are indexed under the Bursa Malaysia Property index. Under the main market of Bursa Malaysia, these companies recorded a market capitalization of approximately RM79.025 billion. In this research, among the top leading property developers are selected namely Sunway Berhad UOA,

Development Berhad, UEM Sunrise Berhad SP Setia Berhad, Mah Sing Group Berhad collectively has a market cap of RM 23.4 Billion, or 30% of the total market share. Based on commonly accepted scientific research, a good maximum sample size is usually around 10% of the population (Elizabeth Burmeister, 2012). In this case, a 30% of the total market cap is a fair reflection and reasonable reflection of the real estate development industry.

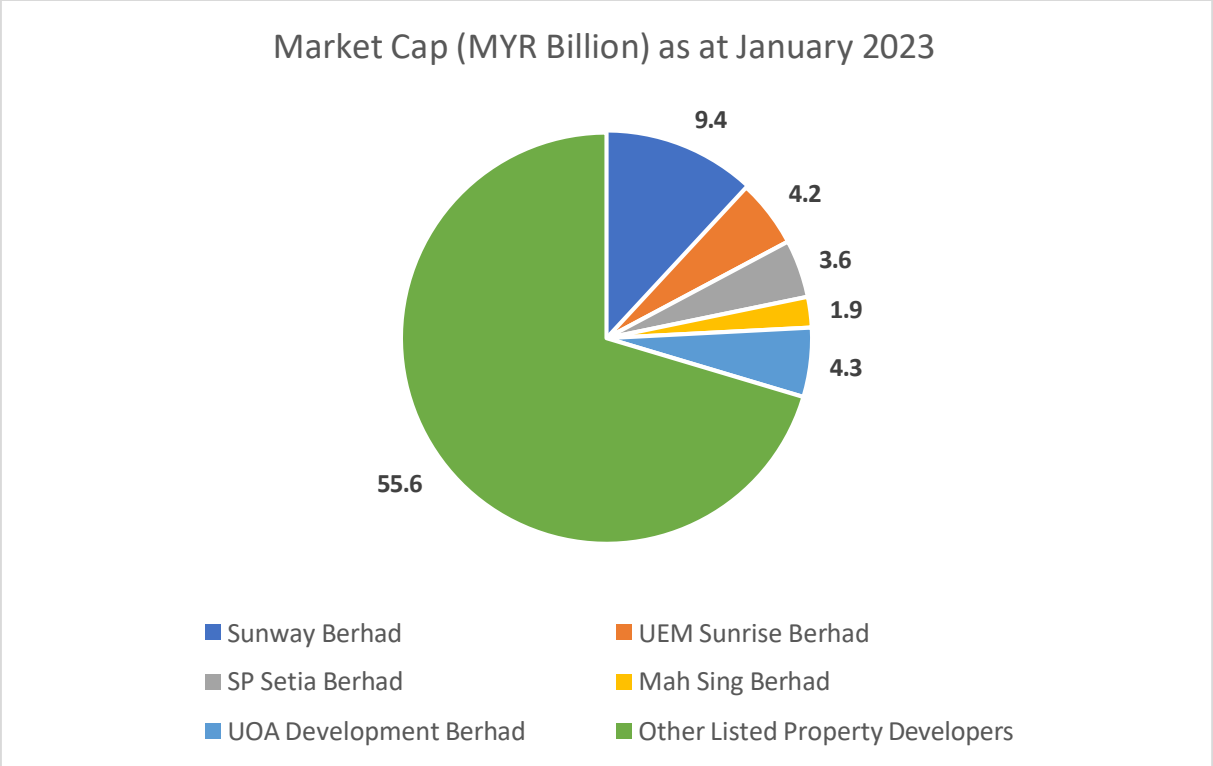

Figure 0.1: The Sample Representing the Population being 30% of the total market capitalization of listed property developers in Malaysia.

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:

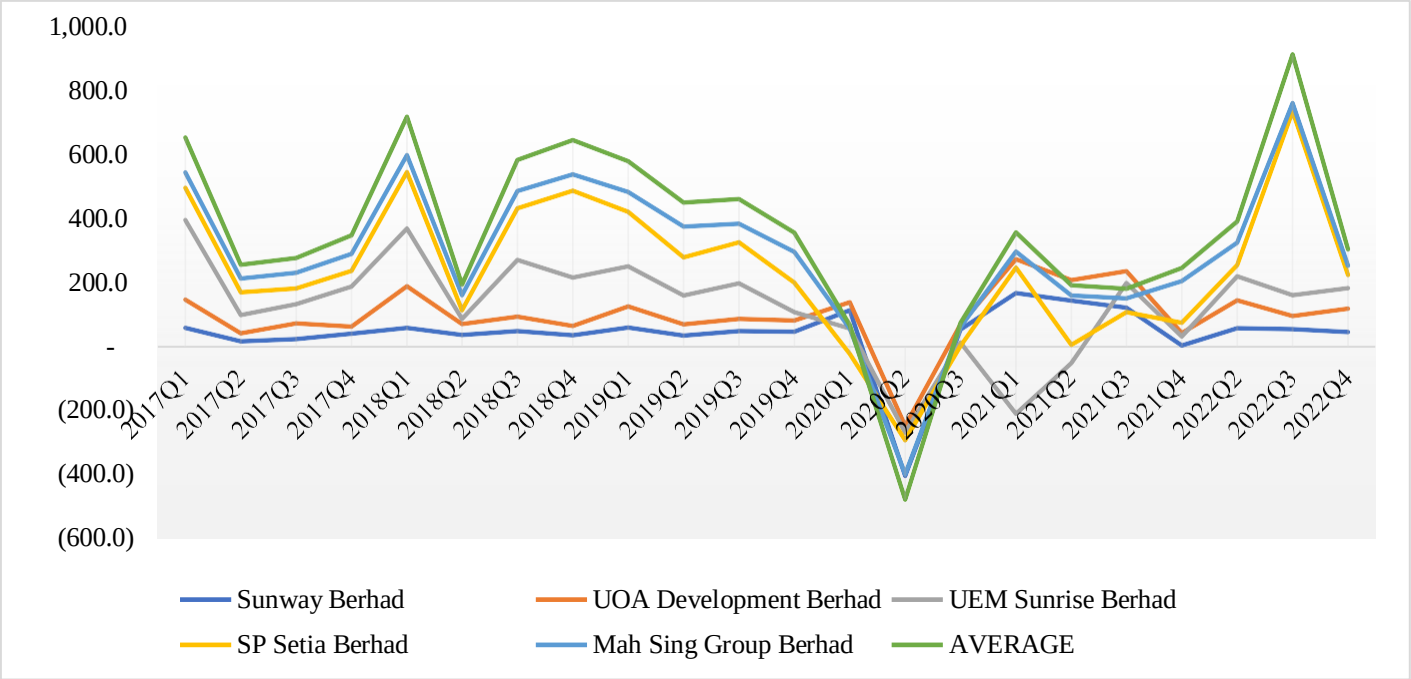

Figure 0.2 Business Value Indicator (PE Ratio) of Five Leading Property Developers in Malaysia (2017-2022)

Source: Compiled by Author based on reports by Bursa Malaysia

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.

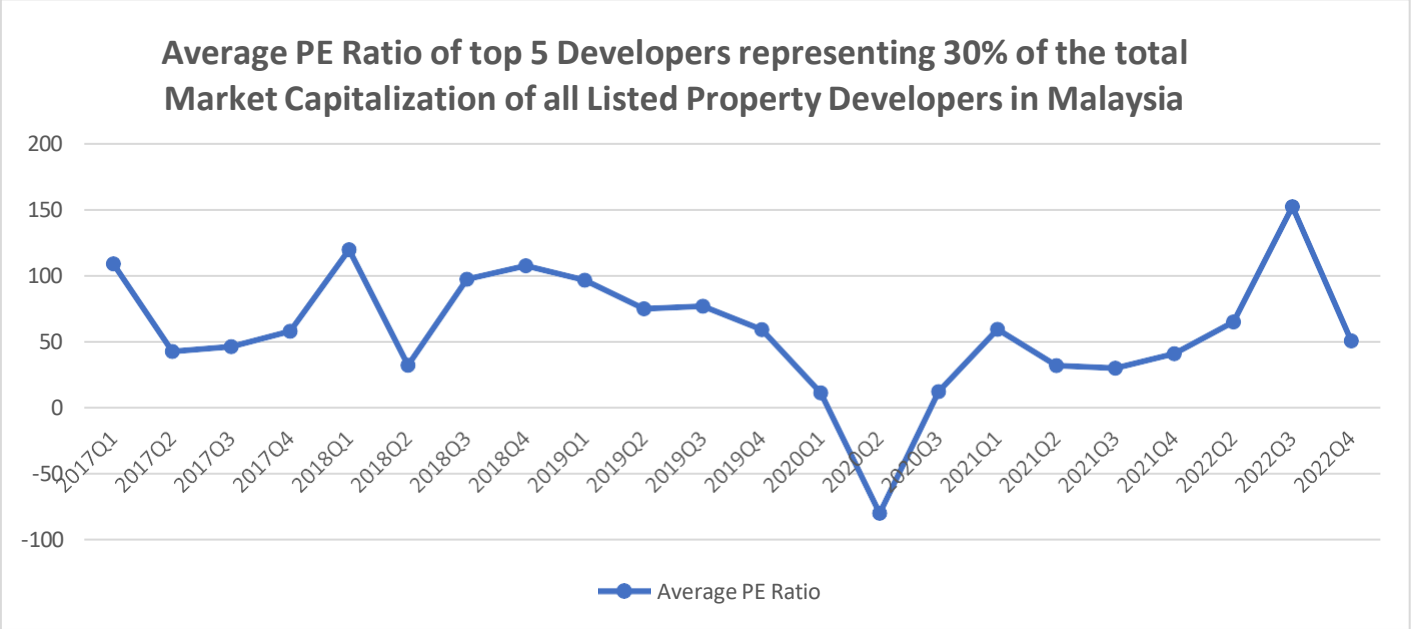

Figure 0.3 Average Business Value Indicator (PE Ratio) of Five Leading Property Developers in Malaysia representing 30% of the entire Market Share (2017-2022)

Source: Compiled by Author based on reports by Bursa Malaysia

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 (Kartal, 2023; De Toro, 2021; Jovanović-Milenković, 2020). The pandemic has created an unprecedented level of uncertainty, causing fluctuations in housing prices across the world (Jovanović-Milenković, 2020).

CONCLUSION

The study highlights the impact of economic disruptions, particularly the COVID-19 pandemic, on the business value and performance of leading property developers in Malaysia. The analysis of the price-to-earnings (PE) ratios of five major property developers, collectively representing 30% of the total market capitalization in the real estate sector, provides a reasonable reflection of market trends. Findings indicate a sharp decline in business value across all major players in 2019-2020, followed by a recovery in 2021. This aligns with global research on stock market volatility and economic downturns caused by the pandemic, demonstrating the susceptibility of the real estate market to macroeconomic fluctuations. The study contributes to the understanding of market performance, offering insights into stock performance and investor considerations, while also drawing comparisons with other Asian capital markets to highlight sectoral vulnerabilities and investment risks.

Future studies should assess long-term market recovery post-COVID-19 to determine whether the sector has regained stability. Expanding the research to include comparisons with global real estate markets could provide a broader perspective on economic resilience. Additionally, examining the impact of government policies, shifts in consumer behavior, and the increasing demand for sustainable and smart developments will offer valuable insights into future market trends. By addressing these areas, future research can enhance the understanding of real estate market dynamics, investment strategies, and policy formulation in the post-pandemic era.

ACKNOWLEDGEMENTS

The author and co-authors would like to Tunku Abdul Rahman University of Management and Technology for funding this project under the TAR UMT Internal Grant Scheme No: UC/I/G2023-00123.

REFERENCES

1. Abel, A. (2005). Macroeconomics. Pearson.
2. Adnan, N. (2022). The impact of COVID-19 on Asian capital markets: A study on event-day effects. Journal of Financial Studies, 45(3), 234-256.
3. Alper, C. E. (2018). The impact of unemployment rates on consumer spending: A macroeconomic perspective. Economic Review, 28(4), 67-89.
4. Bank of Korea. (2013). Korean housing finance system report. Bank of Korea.
5. Beh, L. S., et al. (2020). Macroeconomic determinants of stock returns: Evidence from the US and China. International Journal of Finance & Economics, 25(2), 156-178.
6. Bolisani, E. (2020). Knowledge management in the COVID-19 era: Challenges and opportunities. Journal of Knowledge Management, 24(5), 875-889.
7. Chai, W. C., Tham, K. W., Cheng, C. T., Chong, K. W., & 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.
8. Chauque, D. F. F., & Rayappan, P. A. (2018). Macroeconomic conditions and stock market performance in Malaysia (1998–2012). Asian Journal of Business and Accounting, 11(2), 112-130.

9. Chen, N. (2010). The effect of economic growth on corporate valuations: A global perspective. Economic Studies Quarterly, 62(1), 45-63.
10. Claurentine, J. (2003). Mortgage market fundamentals. Oxford University Press.
11. Clauretie, T., & Sirmans, C. (2003). Real estate finance: Theory and practice. Cengage Learning.
12. Clugston, R. (2009). Macroeconomic conditions and mortgage supply. Palgrave Macmillan.
13. Daim, Z. (2020). The impact of COVID-19 on banking and property loans: The Malaysian experience. Malaysian Financial Review, 12(3), 102-117.
14. De Toro, P. (2021). The impact of COVID-19 on real estate markets: Evidence from Europe and Asia. Journal of Property Research, 38(2), 132-149.
15. Elizabeth, B. (2012). Sample size determination in research: Guidelines for best practices. Journal of Research Methods, 14(2), 45-59.
16. Foo, C. H. (2022). COVID-19 and the Malaysian property market: A review of trends and policies. Journal of Real Estate Studies, 40(4), 215-229.
17. Glickman, N. (2014). Housing finance and mortgage-backed securities. Cambridge University Press.
18. Jahan, S. (2021). The impact of COVID-19 on capital markets: A case study of the Chittagong Stock Exchange. Bangladesh Journal of Finance, 19(1), 88-101.
19. Jovanović-Milenković, M. (2020). Housing market fluctuations during the pandemic: A comparative analysis. International Journal of Housing Markets and Analysis, 14(1), 89-104.
20. Kabeer, M. A. (2017). The effects of macroeconomic factors on stock markets: Evidence from SAARC countries. South Asian Journal of Economic Studies, 24(2), 133-156.
21. Kartal, M. (2023). The COVID-19 shock and its long-term effects on global real estate markets. Journal of Real Estate Finance and Economics, 55(3), 278-295.
22. Lea, M. (1999). The secondary mortgage market: Evolution and impact. Brookings Institution Press.
23. Lim, S. (2021). Digital transformation in the Malaysian real estate sector: Challenges and opportunities. Journal of Property Management, 35(4), 201-219.
24. Maku, O. E., et al. (2010). Macroeconomic determinants of stock market performance in Nigeria (1984–2007). African Journal of Economic Policy, 17(1), 44-67.
25. Meltzer, A. (2010). A history of the Federal Reserve, Volume 2. University of Chicago Press.
26. Menike, L. (2015). Macroeconomic predictors of stock market fluctuations: A case of Sri Lanka and the UK. International Review of Financial Analysis, 42(3), 211-225.
27. Onyeaka, H. (2021). Economic disruptions and the real estate market: The role of the COVID-19 pandemic. Global Journal of Business and Economics, 29(2), 112-130.
28. Oriwo, G. (2012). Stock market reactions to macroeconomic events: Evidence from Kenya. East African Journal of Economics, 10(3), 57-73.
29. Patel, S. (2012). The impact of macroeconomic factors on stock market returns: A study of India (1991–2011). Indian Journal of Financial Research, 19(4), 78-95.
30. Rahman, M. (2009). Macroeconomic determinants of the Malaysian stock market: A time series analysis. Journal of Economic Studies, 36(3), 234-252.
31. Said, H. (2015). Special purpose vehicles in mortgage finance. Springer.
32. Sakakibara, E. (2004). Japanese financial institutions and housing finance. Routledge.
33. Santos, J. (2022). COVID-19 and real estate: Market responses and investment strategies. Journal of Real Estate Investment and Finance, 42(2), 189-203.
34. Setiawan, B. (2020). The role of macroeconomics in stock market performance: Empirical evidence from emerging markets. Asian Economic Review, 18(1), 123-140.
35. Spiteri, G., et al. (2020). The first known COVID-19 cases and global response. Journal of Public Health, 42(1), 112-130.
36. Tham, K. W., & Said, R. (2021). Non-performing property loans and its origination in the real estate finance system: Case study of Malaysia. International Journal of Property Sciences, 11(1), 35-59.
37. 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), 36-44.
38. Tham, K. W., Said, R., & 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, 15(5), 1122-1144.

39. Thornton, J. (1986). Interest rates and their effect on stock market valuation models. Financial Review, 21(4), 67-81.
40. Thomson Reuters. (2023). Global financial markets outlook: 2023 edition. Reuters Economic Reports, 45(1), 1-50.
41. Treasury Board of Canada. (2007). Canadian housing and mortgage policies. Treasury Board of Canada Secretariat.
42. Watanabe, S. (1998). Housing finance in Asia: Trends and policies. Asian Development Bank.
43. Worlu, C. N., & Omodero, C. O. (2017). Macroeconomic variables and stock market performance in Africa (2000–2015). African Journal of Financial Studies, 22(3), 98-119.