Article

Macroeconomic Variables, Financial Ratios and Property Stock Prices in Malaysia

International Journal of Business and Innovation
3 (1) 32-47
2017
IRC Publisher
http://www.theijbi.net/

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Abstract

This study aims to investigate the relationship that property stock price has with macroeconomic variables (GDP growth, exchange rate, and oil prices - model one) and financial ratios (debt ratio and return on equity - model two). Multiple regression analysis was carried out to test the data with KL property index (KLPR) and stock price of 30 property companies listed and active on Bursa Malaysia for the year 2010 to 2014. The results showed that model one variables are significantly related to property stock price. Gross domestic production (GDP) growth has a negative relationship, while exchange rate and oil prices are positively related to property stock price in Malaysia. For model two, debt ratio was not found to be related to or predict property stock price, while return on equity has a significantly positive predictor.

Keywords

Gross domestic production growth, exchange rate, oil prices, debt ratio, return on equity, property stock price, Malaysia.

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Introduction

The stock market is an important channel for the corporate sector to raise capital needed for investment and business activities (Rahman, Hatta, & Ismail, 2013). Extensive studies were conducted in this area as it carries a prominent role in a country's macroeconomic development. Furthermore, with financial deregulation and many efforts taken by policymakers, the financial market is now not only more active than ever before, but it has also become more receptive to both domestic and external factors (Baber et al., 2009). Many are convinced the stock market acts as an indicator of economic activity; where an increase in stock price indicates constant economic growth; whereas a large decrease is reflective of future recession. Meanwhile any aggressive volatility can have negative implications for a country's economy (Barakat, Elgazzar, & Hanafy, 2016).

The dilemma for all investors and portfolio managers is to decide which particular assets are worthwhile investing in and which are not in relation to their prices. The question of which specific indicators should investors focus on before any purchase has not been documented consistently. According to past research (Maghayereh, 2002; Chandra, 2004; Flannery and Protopapadakis, 2002), macroeconomic variables are believed to be among the most significant factors to influence stock prices. These important indicators are used to determine income from stocks due to their large influence on future cash flow. Meanwhile, other research also highlighted the importance of carrying out financial evaluation before making any decisions (Menaje, 2012). Ratio analysis used to explain changes in stock price are commonly referred to in literature as it aims not only to assist investors in minimizing losses and achieving desirable gain, but also in gauging the competitiveness of a company (Arkan, 2016). These ratios typically fall under 5 distinct categories, namely profitability ratio, activity ratio, liquidity ratio, market ratio and debt ratio (Gitman and Zutter, 2012).

As such, this study contributes to existing research by incorporating both the wider economic phenomenon indicators as well as the financial ratios of property companies in Malaysia. The aim is to discover how each variable respond differently to property stock price for the year 2010 to 2014. More importantly, because there are limited studies found that examined the stock price of this industry in Malaysia; the intent was to address this gap. The variables of model one are Gross domestic production (GDP) growth, exchange rate and oil prices. As for model two, the independent variables are debt ratio and return on equity.

The implication of this study is to act as a reference that can be beneficial to various investors, academicians and corporations. Various fundamentals are explained in this research that may be useful in understanding the correlations of the findings with share price of the property industry. This research is intended for the use for investors to identify key indicators in hopes of maximizing their wealth and to properly manage their investments. Based on the findings of this paper, active portfolio managers can choose to include, ignore or eliminate property stocks from their portfolio to maximise returns and minimise risks in the short term. Not only that, but internal managers in property firms can

also utilise the information provided from this paper to equip themselves with strategies to respond to changes in macroeconomic factors.

The remainder of the paper are as follows; a review of literature, hypotheses development as well as the research gap is established in Section 2. Section 3 describes the methodology of the study and Section 4 will present the results. Lastly, it is followed by the conclusion in Section 5.

Literature Review

The attraction of property investment is the role it plays in wealth creation as it provides a form of safe haven or cushion against any hard lending even during weak economic outlook. This industry is a significant portion of the economy dominated by large players since it is mainly capital intensive (Abdullah &Zahari, 2010). The property industry continues to actively contribute to the growth of the Malaysian economy by offering numerous type of input to different sectors (O'Flaherty, 1994).

Since the financial crisis in 1997, the property market in Malaysia has been notably sluggish and continues to be persistent in slow growth (Woon, 2006). The risk of abandoned projects due to the economic downturn has caused buyers and property speculators to hold off in purchasing properties; causing developers to experience intense competition in selling off units. According to Bank Negara Malaysia (2006), housing developers held back in launching new properties and responded to the market condition by adapting to the change in consumer's requirements. Moreover, the funding of new projects are also restricted as financing became harder to obtain. This is noteworthy as developers are competing in a non-equal footing. Those without the support of highly renowned parent companies will struggle to fund new projects.

While many years have passed since the financial crisis and reports also shows the Malaysian property market has been gradually recovering. Several government initiatives had been imposed to increase property transaction since then. By the year 2010, the property market rebounded stating bullish trend and expectations were exceeded (Wong, 2011). The Malaysian economy in 2011 expanded moderately and the property market continues to strengthen recording double digit growth against 2010 (National Property Information Centre, 2012). Residential market which dominates close to two thirds of all other transactions reported to have risen in all states for the strongest pace since the past 13 years; which includes the mid-1990s property boom and financial crisis (National Property Information Centre, 2012). Meanwhile, all other sectors posted a reduction in transaction activity, led by commercial and industrial properties (The Star, 2014). By 2014, the Malaysian economy is affected by the lower oil revenue due to a decreasing oil prices as well as the strengthening US Dollar (Rider LevettBucknall, 2014).

Gross Domestic Production (GDP) Growth and Stock Price

According to Nkechukwu, Onyeagba, and Okoh (2013), past research that examined both developed and developing countries have positively linked stock price and GDP as being a measure of future level of real activity. A notable study by Fama (1990) discovered positive relationship between production growth rates and equity market returns in America as the length of holding period increases. They analyse using multiple regression method based on monthly, quarterly and annual data for the years spanning from 1953 to 1987. Liow, Ibrahim, and Huang (2004) too found high positive correlation of the GDP growth factor for steadily growing economies (Hong Kong and Singapore) relative to the industrialized economies (Japan and United Kingdom) in their examination of the real estate stock market. They justified that since real estate is an important portion of the nation's economy, and the growth of the economy reflects the market condition; GDP growth should have predictive power to real estate stock market.

On the other hand, there are contradicting findings that argue that GDP growth does not have any significant relationship with stock prices. One of them is the study by Pena, Restoy, and Rodriguez (2002) who reasons that typical business cycle indicators such as GDP are not good measures for forecasting stock. As reported by Wall Street Journal, GDP statistics are man- made and thus unreliable to be used (Batson, 2010). Similar insignificant results with stock prices were found in the study of Sulaiman, Hussain, Ali, &Jalil (2009).They examined Kalachi Stock Exchange by utilizing multiple regression analysis covering the period 1986 to 2006.

Others found negative relationships between GDP growth and stock price such as the study by Tan, Loh, and Zainudin (2006) on KLCI during the period 1996 to 2005 and Kamuda and Verghese (2015) who examined the India stock market using multiple regression analysis from the years 2005 to 2014. Bouchouicha and Ftiti (2012) explained, while GDP does have an influence on stock market, the strength of that correlation may not necessarily be the same for real estate markets. In short, there are contradicting results found between GDP growth and stock price. Hence, the following hypothesis regarding GDP growth was formulated:

H 1: There is a significant relationship between GDP growth and property stock price.

Exchange Rate and Stock Price

Previous empirical studies suggest the association between exchange rate and stock return to be both industry and country specific (Luehrman, 1992; Joseph, 2002). According to Bali and Cakici (2010), studies of different markets should be examined and analysed separately as exchange rate influence regional markets not in the same way.

Mgammal (2012) examines the relationship of exchange rate and stock prices of two gulf countries from the period of 2008 to 2009. His result reveals that in the short term, exchange rate is positively significant on *United Arab Emirate (UAE)* stock market price

index, whereas no association was found for Kingdom Saudi Arabia (KSA). Long term on the other hand, found negative association on UAE stock market price index; and no association between these variables on KSA. Yusuf and Rahman (2012) found uni-causal effects of fluctuations of exchange rate to stock prices of the properties sector in Malaysia; meanwhile different sectors yielded different correlations. Their study was carried out through an examination of the Granger causality effect by carrying out VAR framework. Heratri, Hartoyo and Andati (2015) also examined the real estate and property subsector in Indonesia found positive correlation. The positive relationship is explained by the appreciation of local currency, the cost of import for production will be lowered; thus resulting to an improved profitability of the company and increasing the distribution of dividend (Pratikno, 2009). The finding is also similar to the study of Tian and Ma (2010), justifying the findings to the Shanghai Share index used to be mainly driven by banks and real estate stocks, hence is positively affected by the rise of local currency.

However, there is contradicting finding in the study carried out by Liow, Ibrahim, and Huang (2004). They explained on the other hand, the appreciation of the local currency is expected to decrease exports and profits which lead to lower economic growth. Therefore it would be negatively associated with real estate stocks. This was an extension of the work of Liow (2004) which only examined real estate stock in Singapore, by including more markets in their study; namely, Japan, Hong Kong and UK. They employed a three step estimation strategy including GARCH (1,1) and found that the impact of exchange rate to be dynamically linked, though its significance differs across property stock market.

H2: There is a significant relationship between exchange rate and property stock price.

Crude Oil and Stock Price

According to McSweeney & Worthington (2007), crude oil prices have the potential to have a strong impact of the nation's economy performance. While many papers examine the relationship between crude oil prices and macroeconomic variable, little work has been done in investigating the relationship with financial markets (Sadorsky, 1999; Hammoudeh, Dibooglu, &Aleisa, 2014). Not only that, but the findings between crude oil price and stock price are also normally mixed and found to vary across industries. According to Nandha and Brooks (2009), studies that were based on sector indices will lead to more conclusive results. Also, the degree of impact depends on a number of factors, such as the degree of competition of the industry or if it is capable to transfer the changes in oil price shocks to customers through price increments. Their study focused solely on the transport sector across 38 countries, and found that those with more mature economies such as European countries to be more significant than Asia Pacific, emerging and Latin American countries.

One of the earliest studies conducted were by Chen, Roll and Ross (1976), they tested using a multifactor model and found no evidence of oil price factor on the U.S stock market. Hamao (1998) too revealed that the Japanese stock market index was not affected by an unanticipated change in the oil price. Likewise, Lin, Fang and Cheng (2008)

examined the relationship in the Chinese stock market using multivariate VAR among various industries. Oil price shocks were documented to not statistically be significant on most Chinese stock market indices, except for manufacturing and oil companies. In addition, there are other mixed findings by Sadorsky (1999) and Papapetrou (2011) who discovered oil price to have a negative effect on stock returns in the US and Greece respectively using GARCH and VAR.

In contrast, Narayan and Narayan (2010) found a positive impact on Vietnam stock market through the application of numerous tests. This result is similar to the finding of Lai, Wang, and Chen (2011) in oil producing countries of Norway and Canada from 1988 to 2008. In addition, in the study by Saeed and Akhter (2012) in Pakistan also discovered oil prices to have a positive impact on the banking index from 2000 to 2010. Only one study was found to focus on the stock market of Malaysia by Chan (2014) for the year 2009 to 2013. A positive impact was found on between crude oil prices and Malaysian stock price (KLCI).

H 3: There is a significant relationship between oil prices and property stock price.

Debt Ratio and Stock Price

Past research all assumed ratios to have an influence towards stock price as investors commonly use ratios to evaluate the performance of firms before deciding on their purchase. The purpose of examining debt ratio is because it is a good indicator to measure a company's risk (Gitman&Zutter, 2012). Weygandt, Kimmel, and Kieso (2010) claimed that solvency ratios have the ability to measure a company's survivability for over a long period of time.

Al-Yahyaee, Pham, and Walter (2013) examined firms in Oman and found stock returns to have significant effect on different forms of debt (short term, long term, total debt and bank debt). A similar study carried out by Cai and Zhang (2008) documented long term leverage to have a larger negative significant effect, but a weaker effect of change for short term debt leverage. They also discovered these negative effects to remain significant for financially healthy firms and a stronger effect for firms with limited debt capacity. It was concluded that their discovery is in line with the dynamic view of pecking-order theory which explains that an increased in debt may lead to future underinvestment problems, hence reducing the value of firms.

Furthermore, two journals were found that examined the property market in Asia region. One of which is by Thim, Choong, and Asri (2012), they employed the ordinary least squares (OLS) method to study the factors that has an impact on the performance of 36 property firms listed on Bursa Malaysia for the period 2003 to 2007. They discovered debt ratio to have a lesser influence on property stock price as compared to other ratios - ROA, ROE and EPS. The other is by Stefano (2015) who examined 18 property companies listed on Indonesia Stock Exchange using multiple linear regression analysis. He used debt to equity ratio as representative of debt ratio and found no significant impact of this

relationship to property stock performance. This result is similar to four previous studies conducted by Haghiri and Haghiri (2012), Ika (2013), Kusumo (2011) and Ulupui (2007).

H 4: There is a significant relationship between debt ratio and property stock price.

Return on Equity and Stock Price

Profitability ratio falls under one of the distinct group of accounting ratios, each providing investors with different views of the performance of a company. This ratio is used to assess how well the company is at generating earnings that are the rights of capital owner over a specified period of time. The author chose to use return on equity because it is an indicator to measure the overall effectiveness of a company's management of funds that was invested by shareholders (Har & Ghafar, 2015). Reilly & Brown (2012) justified ROE as consistently used indicator because it properly reflects the overall risk of a company as well as investor's financial risk. Furthermore, Jensen Investment (2008) explains ROE to be a useful criterion for the selection of stocks that can provide attractive returns over a period of time.

An interesting take is found in the study of Arkan (2016) that examined stock price trends in emerging markets by running multiple regression analysis on three sectors listed in the Kuwaiti financial market for the year 2005 to 2014. His study proved ROE as one of the most effective ratio on stock price for industrial, service and investment sector. A related research was carried out by Thim, Choong, and Asri (2012) that employed the ordinary least squares (OLS) method on 36 property firms listed on Bursa Malaysia for the period 2003 to 2007 found ROE to have strong significance with property stock performance. Petcharabul and Romprasert (2014) explained based their own study as well as that of others that different methodology used in different countries would yield different results. They applied panel data analysis to test the relationship in technology industry of Thailand Stock Exchange from the year 1997 to 2011 on a quarterly basis and found ROE to be a significant factor. Similar to the study by Haghiri and Haghiri (2012) who focused on manufacturing companies at a general and industry level for the year 2003 to 2008 using multivariable regression patterns and delaying variable models. Furthermore, Har and Ghafar (2015) revealed that ROE has the highest explanatory power in explaining the variation in stock returns prior and during economic recession for plantation industry in Malaysia among other performance measurement (ROCE and ROA).

However despite the wide use of this ratio by financial analyst to determine the market value of company, profitability measures such as ROE have its shortcomings as brought up by Rappaport (1981). He reasons that companies have different investment requirements and the choice of employing different accounting methods. Not only that, it is further supported by Ehrbar (1998) who states that earning calculations fail to take into account the time value of money that may fail to measure changes in the economic value of companies.

H5: There is a significant relationship between return on equity and property stock price.

Research Gap

There were four gaps present in the literature: Industry, time, model, and variable gaps. The first is the industry gap. According to Petcharabul and Romprasert (2014), studies looking into different countries will produce different results. Based on the literature review above, limited are found that examined Malaysia and the property industry. Therefore, this study will address the industry gap in the focus of Malaysia.

Next is the time gap. The timing of study carried out in terms of years and frequency (annually, monthly, quarterly or daily) will produce different results (Petcharabul & Romprasert, 2014). This study examines a fairly recent year starting January 2010 to December 2014, where model one consist of monthly data and model two with annual data.

Third is the model gap. This study is different from others as the author has incorporated two models in the examination of property stock price. The formulation of two models is also supported by Stefano (2015) to expand the area of coverage by including both financial ratios and external factors into the independent variable.

Last is the variable gap. This study contributes to literature by adding oil prices to determine its impact on property stock price. It is included as most studies found to examine this relationship were not based in Malaysia, let alone in the property sector.

Methodology

This non-experimental correlation research gathered all historical data only from reliable secondary sources from the internet. This study adopts the multiple regression analysis and also carried out Pearson's r and ANOVA tests to either reject or fail to reject the hypotheses that were set previously. The time period of five years is selected for a better accuracy for short run statistical test results.

Data Collection

This study consists of five independent variables and one dependent variable. The first model (Table 1) of macroeconomic variables undertaken in this study are GDP growth, exchange rate (the measurement of Ringgit Malaysia (RM) towards United States Dollar (USD)), oil prices (RM per barrel), and KL Property Index (KLPR) as the measure of property stock price. The empirical analysis of model one is carried out using monthly data, covering the period from January 2010 to December 2014. Due to the unavailability of monthly GDP growth data in Malaysia, quarterly data are collected instead. There are a total of 60 observations.

Table 1: Model One

Descriptive Statistics

	Mean	Std. Deviation	N
KLPR_PRICE	1118.8885	210.98360	60
GDP	5.7450	1.43449	60
EX	3.1579	.11240	60
OIL	307.7508	36.44487	60

Model two (Table 2) independent variables that were taken into consideration are debt ratio (DR) and return on equity (ROE). These were collected based on published annual reports of the chosen 30 property companies in Malaysia. To calculate for these ratios, divide total liabilities by total assets for debt ratio and divide net income by total equity for return on equity. Meanwhile, property stock price is computed based on the monthly closing of the stock price of each of the 30 property firms for five years. It is then averaged out for each particular year to be used as data to run using SPSS. Therefore, model two has a total of 150 observations.

Table 2: Model Two

Descriptive Statistics

	Mean	Std. Deviation	N
Price	0.9553	0.63375	150
Debt	22.5175	16.81453	150
ROE	5.7479	8.63875	150

Results

Multicollinearity Test

The test for multicollinearity is to identify if independent variables are highly correlated with one another; and if this issue is present, it can adversely affect the result of the multiple regression. For this study, there is no presence of multicollinearity as both models have tolerances that are higher than 0.1 and VIF that are lower than 10. In short, all variables fit this research.

Model One Hypothesis Test

Model one is approximately 51.9% influenced by the changes of the independent variables: GDP growth, exchange rate and oil prices. The ANOVA test is found to be significant. As a result, the independent variables differ significantly with each other, and are significantly related to the dependent variable. In other words, GDP growth, exchange rate, and oil prices share a significant relationship with KLPR stock prices (Table 3).

Table 3: Model One Coefficients Table

Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	Std. Error	Beta		
1	(Constant)	-2827.186	685.424		-4.125	.000
	GDP	-85.571	17.258	-.582	-4.958	.000
	EX	1166.180	213.402	.621	5.465	.000
	OIL	2.453	.589	.424	4.163	.000

The multiple regression model is presented as follows:
Property Stock Price = -0.582 GDP + 0.621 Exchange Rate + 0.424 Oil Price

The equation is explained with 1 unit of change of GDP growth would result to a -0.582 unit of change in property stock price. Also, it has a *p*-value of 0.000 < 0.005. Therefore, this indicates GDP growth have a negative significant relationship with property stock price. The author can reject the null hypothesis and accept the alternative hypothesis.

Based on the equation, one unit of change of exchange rate, property stock price will change by 0.621 units. Furthermore, with a *p*-value is 0.000 < 0.05, this means the relationship is both positive and significant with property stock price. Hence, reject the null hypothesis and accept the alternative hypothesis.

Lastly, a one unit of change of oil price will result to a change of 0.424 in property stock price. Since it carries a *p*-value of 0.000 < 0.05, this indicate a positive significant relationship between oil prices and property stock price. Therefore, reject the null hypothesis.

Model Two Hypothesis Test

As for model two (Table 4), property stock price is 6.3% influenced by the changes of debt ratio and return on equity, and 93.7% affected by other variables. The ANOVA test show model two to be significant. This indicates that the debt ratio and ROE is significantly different with each other, and are significantly related to the property stock price.

Table 4: Model Two Coefficients Table

Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	Std. Error	Beta		
1	(Constant)	.842	.095		8.868	.000
	Debt	.000	.003	.009	.107	.915
	ROE	.018	.006	.252	3.121	.002

The multiple regression model is presented as:
Property stock price = 0.009 Debt Ratio + 0.252 Return on Equity

The equation is explained with one unit of change of debt ratio, the change in property stock price is 0.009. According to the table, debt ratio has a *p*-value of 0.915 > 0.05. This indicates that this variable is insignificant and thus fails to reject the null hypothesis

Following that, with a one unit of change in return on equity, property stock price will change by 0.252 units. ROE is found to carry a *p*-value of 0.002 < 0.05, therefore, this relationship is positively significant with property stock price. The author can thus reject the null hypothesis and accept the alternative hypothesis.

Conclusion

In conducting this research, two models (macroeconomic variables and financial ratios) are formulated in attempts to answer the research question in a more comprehensive manner. The five variables are GDP growth, exchange rate, oil prices, debt ratio, and return on equity. To check for the hypotheses formulated, the author gathered data covering the period starting January 2010 to December 2014.

Under model one, the multiple linear regression analysis revealed exchange rate to have a positive relationship and is the most significant variable in explaining for property stock price. GDP growth on the other hand was found to reveal a significant negative relationship with property stock price. Lastly, the relationship between oil prices and property stock price in Malaysia are discovered to be significantly positive.

The finding of this research is consistent with the study by Tan, Loh, and Zainudin (2006) and Kamuda and Verghese (2015) that affirm GDP growth have a negative impact on stock prices. In addition, the significant positive relationship between exchange rate and property stock price is consistent with the research carried out by Yusuf and Rahman (2012) as well as Heratri, Hartoyo, and Andati (2015) of the property industry in Malaysia and Indonesia respectively. Other positive correlation is found in the study of Mgammal (2012) Pratikno (2009), and Tian and Ma (2010). Moreover, the positive correlation of oil prices in this research is consistent with the study by Chan (2014) which examined KLCI from January 2009 to December 2013 as well as Narayan and Narayan (2010), Lai, Wang, and Chen (2016) and Saeed and Akhter (2012).

As for the statistical result for model two, debt ratio is found to be insignificant. Meanwhile, a positive significant relationship is found between return on equity and property stock price.

Based on the results above, the insignificant result of debt ratio is not consistent with the study by Thim, Choong, and Asri (2012) that found a relatively small influence on property stock prices for Malaysia property firms for the period prior to the crisis (2003 to 2007). This insignificant result is similar to Stefano (2015) in the examination of Indonesia property stock exchange for the period 2009 to 2013. Furthermore, similar insignificant influences were found in studies carried out by Haghiri and Haghiri (2012), Ika (2013),

Kusumo (2011) and Ulupui (2007). Lastly, ROE found to possess positive significance prove that it is a useful indicator that shows an impact on property stock prices during the period. This result is similar to the study of Thim, Choong, and Asri (2012) in the examination of 36 property firms listed on Bursa Malaysia. Other studies that also supported this finding are by Petcharabul and Romprasert (2014), Haghiri and Haghiri (2012), Arkan (2016) and Har and Ghafar (2015). This discovery is justified because investors are concerned with the returns provided to them for every unit of capital invested.

As for future recommendation, firstly, it is recommended to include more independent variables for both models. There are other external factors such as money supply, interest rate and more that may influence how companies conduct businesses and subsequently influence property stock price. Not only that, but expanding the variables by including other financial ratios such as debt to equity ratio, net profit margin and more that can potentially be useful indicators for decision making.

Next, a longer time period and frequency (daily) would reflect more reliable results for future researchers to explore the relationship in a more extensive manner. According to Menaje (2012), the use of financial statement would best be on an annual basis of at least 10 years to improve reliability and reduce the volatility of data. Not only that, a longer time horizon is more appropriate as the effect of crisis may distort the property stock prices (Yang & Zhou, 2011). It is also advisable to increase the sample size of property companies so that future studies can obtain a more accurate result.

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