The Relationship of Macroeconomic Variables withREITs' Performance:The Case of MalaysianCompanies

Nur Azwani Mohamad Azmin, Anita Md Shariff

Faculty of Business Management, Universiti Teknologi MARA, Dungun, Terengganu, Malaysia

ABSTRACT

This paper aims to evaluate the link between the performances of Real Estate Investment Trust (REITs) companies in Malaysia with the movement in macroeconomics factors. Four main macroeconomic variables namely unemployment rate, interest rates, exchange rates and gross domestic product (GDP) per capita were chosen.Eight years distribution yields (DY) of 12 listed funds from 2007 to 2014 were taken as a performance indicator. Interest rate (%), GDP per capita (RM), exchange rates (RM) and the unemployment rate (%) of Malaysia for the respective years were collected as independent variables. Pooled Ordinary Least Square (POLS) method is being employed.All variables show significant relationships with the performance of Malaysian REITs. GDP per capita, unemployment rate and exchange rate are found to be positively related. Only interest rate is negatively related with the performance. GDP per capita was identified as the most influential variable. The positive relationship of unemployment with REITs performance indicates that REITs remain impervious against negative economic outcomes.This paper proves that all four macroeconomic variables are significant towards REITs' performance. It reminds the REITs companies to be vigilant towards the movements and trends in the economy, especially the main macroeconomic indicators in anticipating the firms' performance.It also provides more confidence to investors that REITs is a progressive investment alternative.

KEYWORDS: REITs, Distribution Yield, Real Estate, Unemployment Rate, Interest Rates, Exchange Rates, GDP.

INTRODUCTION

Real Estate Investment Trust (REIT)companies in Malaysiais defined by [10]as trust fund that possess and administers commercial real estate such as shopping complexes, hospitals, plantations, industrial properties, hotels and office lots to generate income. Malaysia REITs established in 1989 was the first in Asia. Subsequent to 1997-1998 Asian economic crises, REIT market began to expand significantly in other Asian countries. REIT market took off in Japan and Singapore in 2001 and 2002 respectively. Today, Japan has the most developed REIT market while Singapore is widely considered to be the most dynamic REIT market among other Asian countries[15].

REITs aremore innovative compared to direct real estate investment that involves high transaction cost and uncertain return on investment [14]. Unlike direct real estate that face some potential of liquidity and physical structure issues [18], REITs enhance the liquidity as well as the efficiency of the real estate market [27].Through diversification and risk mitigation, REITs provide alternatives for portfolio investment complementedby other investment product. Investors could benefit from the steady flow of dividend and service provided by professionals dedicated to add value and generate more income to the asset [10]. REITs also benefit property owners who regard it as alternative to bank borrowings.

The Malaysian REITs market, however, is relatively small compared to other Asian countries based on total market capitalization [19]. In Malaysia, the minimum capital requirement for newly offered REITs is RM100 million. The asset needs a few years to grow before listing in M-REITs [34]. Figure 1 is an example of framework by one of the REIT companies [35]. It describes the flow of the funds invested in REITs. The trustee is a firm not directly involved in REITs funds management. The management companies provide services by appointing a property manager to manage the investment fund. Gain from the investment will be distributed back to investors in the form of dividend paid annually. As such, the performance of the REITs is the main factor for investors to decide on their investment.
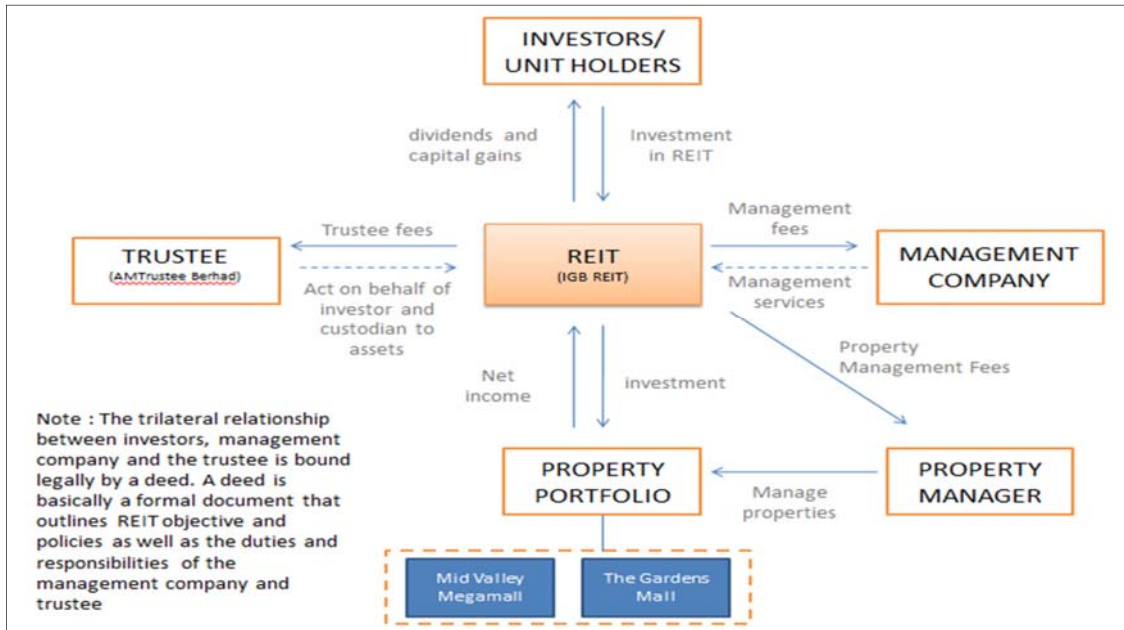
Corresponding Author: Nur Azwani Mohamad Azmin, Faculty of Business Management, UniversitiTeknologi MARA, Dungun, Terengganu, Malaysia, E-mail: nurazwani@tganu.uitm.edu.my

Figure 1: IGB REIT frameworks

Figure 2shows that M-REIT giving the highest yields as compared to other investment facilities [37]. Other than that, M-REIT also provides some benefits to the investors such as affordable with the minimal cost, more liquid as compared other investment types in real estate and provides steady dividend.
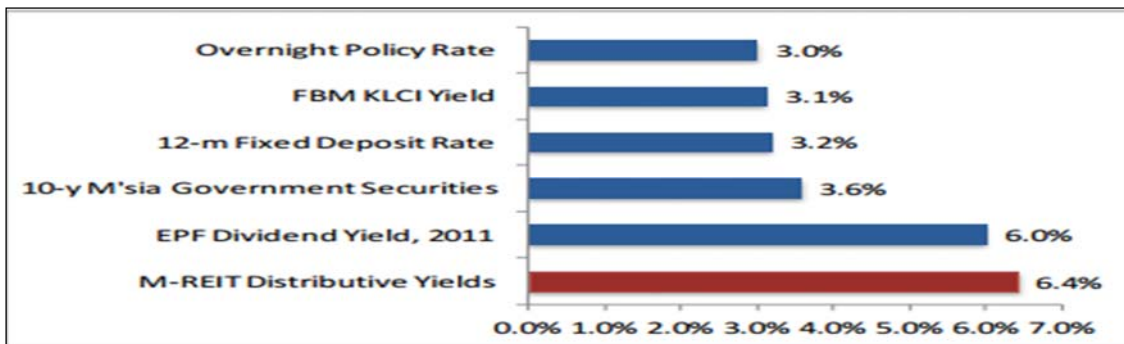

Figure 2: Comparisons of yields

The Impact of GDP, Interest Rate, Unemployment and Exchange Rates on REITS

Many studies have used macroeconomics variables as the indicator to analyze the trends and performances of various sectors in the economy. Most of the recent studies on the impact of economic and financial factors on real estate return have used Sharpe, Treynor and Jensen Index [15,33].Notwithstanding that for the property sector, the impact of macroeconomic variables varies from one nation to another. A study carried out on 5 economies produces different results for each market [22]. Hong Kong market shows that expected property stock excess returns are positively correlated with the conditional variances of gross domestic product(GDP) growth, industrial production output (INDP) growth, unexpected inflation and exchange rate; and negatively correlated with the conditional variances of interest rate and money supply. For Singapore, higher expected excess returns are associated with a higher conditional variance of INDP growth; and a lower conditional variance of GDP growth, unexpected inflation and exchange rate. For the UK, the resultindicates that all 5 conditional variance coefficients are negative while in Japan, the expected excess returns are positively correlated with the conditional volatilities of GDP growth, interest rate, money supply and unexpected inflation [24].Another study by [21] found that economic variables have had significant impact on commercial property return tothe UK. A study by [15] indicated that REITs performance was relatively stable during economic crisis. This is probably due to the 'lag effect' experienced by the property andconstruction sectors during the economic cycle transitions.The spillover effect of economic recession is most likely experienced by property sectors in the post-crisis period.

In [37] defines GDP as "the sum of gross value added by all resident producers in the economy plus any taxes and minus any subsidies not included in the value of the product". GDP is chosen as a variable since the real estate is a substantial asset in an economy [22].They found that GDP per capita in Hong Kong, Japan, Singapore and UK showed a positive relationship with REITs performance. This result is consistent with study by [8] on Sweden and Switzerland and agreed by [22] which indicates that there is a significant positive relationship between U.S economic growth and real estate return. In [14] highlighted that unexpected changes of GDP per capita give significant effect in real estate market. In [10] found that economic strength had the most significant impact on REITs performance compared to other factors.

However, according to a study using Non Causality Hypothesis Test (HNC) on some provinces in China, there is no Granger relationship between GDP and real estate performance. Real estate investment as well as GDP does not correlate to each other [39].In [12] suggest that there is no relationship between GDP and real estate investment in Hong Kong. This contradicts the results of similar previous studies in other markets. The lack of relationship was said to be due to the significant variation in the project's duration in Hong Kong.

The difference in the findings on the interest rate relationship could be due to the types of REIT portfolio. Certain portfolios may involve industries which are non-sensitive to interest rate change such as healthcare REITs. The variations could also be affected by the dependency of a country to interest rate fluctuation. For instance, US REITs index is more dependent on interest rates compared to UK REITs [10].A study by [28, 21]also found a positive relationship between interest rate and the REITs return. A study by [10] based on data since 1979 found that rising interest rates does not negatively impact REITs' performance. This is probably because commercial real estate has the pricing power to cover the rising costs by increasing the rents during high interest period. Increasing interest rates are always associated with economic expansion, which rental and cash flow would increase while the real estate value would appreciate. This is also consistent with a study on the property market in Hong Kong, Japan, Singapore and UK by [25]. Except Singapore, the other 3 nations show significant positive correlation at 1 pct and 10 pct significant level between interest rates and REITs' performance.

In assessing the interest rate impact on REITs performance, in [25] found a negative relationship between the variables. The negative relationship occurs at all short, medium and long term interest rate levels. A study by [17] also found that interest rates had had a negative relationship with REITs return. Using interest rates as a proxy of current and future state of the economy and business health, in [8] however found no relationship between the variables.

Previous studies showed that unemployment seems to have a relatively high negative correlation with the real estate market [21].However,for Sweden and Switzerland market, the correlation between these variables disappeared in the crisis period. A negative relationship exists in the pre-crisis period, to then become almost insignificant in the crisis period. The responsiveness of the Swiss labor market to the real estate stock market seems to be more consistent compared to Sweden, possibly due to the political structure of the Swiss economy that is based on liberal labor politics[7]. In [12] however found that the unemployment rate is positively related to real estate return.

In terms of exchange rate, in [21] found a positive relationship with real estate return in Japan and Singapore whilst negative relationship in U.K and Hong Kong.In [34] found that there is positive relationship between exchange rate and real estate performance.According to the [24], the appreciation of the Ringgit as home currency makes real estate the most attractive investment to the investors due to the appreciation of the asset value. A study by [21] showed that exchange rates were negatively related to real estate return. In [8] found that the exchange rate showed an unrecognized relationship with the real estate market. The relationship was positive based on data from 2003 to 2007 but turned negative based on data from 2008 to 2012.

All the above findings pointed out that the macroeconomic effect on REITs return is diverse across markets under study. This study works to find how these macroeconomic variables impacted the REITs performance in Malaysian market.

METHODOLOGY

REIT performance can be measured using various methods suggested by [10, 27]. The most commonly used methods are Net Asset Value (NAV), management expense ratio (MER), total return (TR) and distribution yield (DY). For the purpose of this study, the authors decided to use DY as the measurement for REITs performance.DY is calculated by dividing income distributed to unit holders with REIT's market price or selling price [27].

DY is the amount of cash flow received or paid out by an annuity, REIT or other similar income paying instrument. The DY of a security is calculated by dividing the distributions paid (yearly, monthly, etc.) by its cost or net asset value. DY can be used as a measure of investment cash flow provided by an investment relative to the cost paid for that investment

A secondary data approach is being used in this study. DY figures from 2007 until 2014 of 12 listed funds were gathered from their respective annual reports [1,2,3,4,5,6,18,29,32,35,36]. The 12 listed companies were chosen based on the availability of data in the period under study. The historical data of interest rate (%), GDP per

capita (RM), exchange rates (RM) and the unemployment rate (%) are all from World Bank, Bank Negara Malaysia and Department of Statistics Malaysia websites.

Theoretical Framework

The suggested model for this study is as follows:

$$DY = \alpha + \beta_1 UNEM + \beta_2 lnGDPC + \beta_3 IR + B_4 EX \tag{1}$$

where DY= the measure of REIT performance, UNEM= unemployment rate (%), lnGDPC= natural log of GDP per capita, IR= interest rates (%) and EX= exchange rates (RM).

The number of observations for this study is 96 given the six consecutive year period of 12 M-REIT funds. Descriptive analysis was carried out to find mean, minimum, maximum and standard deviation values.

Correlation of Coefficient

Correlation refers to the strength of the relationship between 2 variables. Strongly correlated means the variables have strong relationship and vice versa. It also used to test multicollinearity problem from rho value. If rho value is greater than 0.8 (>0.8), the model hasa multicollinearity problem thus the variables will be rejected.

Breusch and Pagan Lagrangian Multiplier Test

The objective of this test is to decide which model is the best for the study. The decision needs to be made whether to choose POLS or proceed with Random Effect model (RE). In order to proceed with RE model, the null hypothesis (H_0) of POLS will be rejected. The probability of Chi^2 value needs to be less than 0.05 level of significant.

FINDINGS AND DISCUSSION

Descriptive Analysis

Table 1 shows the summary statistic of sample means, minimum, maximum and standard deviation of the macroeconomic variables. The total number of observations for UNEM, GDPC, IR and EX is 96. The observation comprises of 12 Malaysian REITs over 8 years period of study. The distribution yield ranged from 4.7 to 13.79 with a mean value recorded in7.646 which considered moderate. The coefficient of variance value for GDP per capita shows the lowest value which indicates highest consistency.

Table 1: Descriptive analysis result

	DY	UNEM	lnGDPC	IR	EX
Mean	7.646	3.213	10.304	2.125	3.261
Std. Dev	1.557	0.191	0.130	4.533	0.155
Min	4.700	2.900	10.110	-3.900	3.06
Max	13.790	3.600	10.496	11.8	3.52
CV	0.204	0.059	0.013	2.133	0.047

Correlation of Coefficient

Table 2 shows the result of the relationship between a dependent variable (DY) and 4 macroeconomic variables which were unemployment (UNEM), interest rates (IR), GDP per capita (lnGDPC) and exchange rate (EX).The higher the level of correlation of coefficient, the stronger the relationship among the variables used. The highest level of coefficient among all independent variables with the dependent variable is 0.3425 between DY and Unemployment. Strong relationship were found to exist between independent variables namely between unemployment and GDP per capita at -0.7643, between exchange rate and unemployment at 0.5815 and between GDP per capita with the exchange rate at -0.7483.Since all figures are below 0.8, there is no multicollinearity problem in this study.

Table 2: Correlation of coefficient result

	DY	UNEM	GDPC	IR	EX
DY	1.0000				
UNEM	0.3425	1.0000			
lnGDPC	-0.2914	-0.7643	1.0000		
IR	-0.1340	0.4213	-0.1263	1.0000	
EX	0.2667	0.5815	-0.7483	0.3780	1.0000

Breusch and Pagan Lagrangian Multiplier Test

Breusch and Pagan Lagrangian Multiplier test is carried to decide whether to use Pooled Ordinary Least Square (POLS)or panel data method based on the following hypothesis:

H_0: Choose POLS
H_1: Choose Random Effect

Table 3 shows the result of the test. Probability of Chi^2 indicate the value of 0.9150 which is not significant, since it is bigger than 0.05 (>0.05) level of significant. Thus, the researcher needs to choose POLS in this study.

Table 3: Result of BP and LM test

	Var	Sd = sqrt(var)
Dy	2.4256	1.5574
E	1.8082	1.3447
U	0.0198	0.1408
Test: var (u) = 0	Chi^2 (1)	0.01
	Prob > chi^2	0.9150

Pooled Ordinary Least Square

Since the Breusch and Pagan Lagrangian Multiplier test is insignificant at 5% level, the study proceeds to use the POLS method instead of RE.

Table 4 shows the result of POLS test. The result shows that all 4 variables used in this study are significant with REIT performance at the 5%level. Unemployment, GDP per capita and exchange rate are found to have a positive relationship while interest rate shows a negative relationship with the performance.

Table 4: Result of regression POLS

Source	SS	df MS	MS	Number of obs		= 96
				F(4, 91)		= 8.78
Model	64.1429748	4	16.0357437	Prob > F		= 0.0000
Residual	166.289683	91	1.82735915	R-squared		= 0.2784
				Adj R-squared		= 0.2466
Total	230.432657	95	2.42560692	Root MSE		= 1.3518
dy	Coef.	Std. Err. t	T	P>t	95% Conf.	Interval
unem	5.616487	1.350897	4.16	0.000	2.933097	8.299878
lngdpc	5.92221	2.428808	2.44	0.017	0.000175	0.0027008
ir	-0.1807226	0.0409861	-4.41	0.000	-0.2621365	-0.0993087
ex	4.378609	1.549475	2.83	0.006	1.300766	7.456451
_cons	-85.31439	31.79931	-2.68	0.009	-148.4798	-22.14898

The following equation is derived from the coefficient values of the model.

DY = -85.31 + 5.616 UNEM + 5.922 lnGDPC - 0.181 IR + 4.379EX   (2)

where DY= the measure of REIT performance (%), UNEM= unemployment rate (%), lnGDPC= natural log of GDP per capita, IR= interest rates (%) and EX= exchange rates (RM).

The R-square value for the model is recorded at 27.84%. According to [22], the low R^2 could be due to the presence of the volatility of the variables used in the period investigated, for example, incident of 11 September 2001 and the current financial crisis. Besides, in [8] also claimed that the variance of the result may be explained by the methodology used as well as the period investigated.

The result shows a significant positive relationship between unemployment, GDP per capita and exchange rate to the performance of the REITs in Malaysia. While, the interest rate shows the negative relationship with the performance of REITs.

An increase by 1% of unemployment rate in Malaysia will raise the DY by 5.616%. This result is consistent with the study by [12] that says unemployment rate has a positive impact on the performance. From the strong negative relationship of GDP per capita and an unemployment rate of -0.7643 value, it could be implied that there is potential of spillover of the economic growth impact on the performance during the period of high unemployment. This is similar to the finding by [14].A further research is required to prove this and to explain the positive relationship between Unemployment and REITs performance in Malaysia context.

The positive relation between GDP per capita and DYshows that an increase of 1% GDP per capita will cause an increase of DY by 5.922%. This finding is in line with the studies done by [8, 22,23].A positive economic growth encourages appreciation of the real estate value and increase the rental income.

While, the negative relationship between interest rate and DYare consistent with the studies done by [8, 18,20, 23]. The result found that a 1% increase in the interest rate will reduce 0.181% of DY. Increase in interest rates causes an increase in the cost of borrowing, which in return reduces the investment income or return on investment. This certainly poses negative impact to the REITs DY.

The exchange rate is significantly affecting the REITs performance where if the increase RM1 of exchange rate will increase REITs performance by 4.379%. This result is consistent with the studies by [21,22, 24,25]. According to the [24], the appreciation of the Ringgit as home currency makesreal estate the most attractive investment to the investors due to the appreciation of the asset value. Likewise, Malaysia's competitiveness in the real estate market will be weakened if currency differentiate against other currencies.

CONCLUSION AND RECOMMENDATIONS

This study was intended to identify the relationship of macroeconomic variables towards the performance of M-REIT using annual DY data from 2007 to 2014. The results of the POLS analysis on 4 macroeconomic variables (UNEM, EX, IR and GDPC) show a significant relationship towards M-REIT performance. GDP per capita was identified as the most influential variables followed by unemployment rate. The impact of the macroeconomic variables is obviously different across the market. Therefore, it is such pertinent to examine the Malaysian REITs market exclusively in order to help increase the resources in this field and contribute towards the expansion of Malaysian REITs. Future researches are encouraged to use other macroeconomic variables such as investments, industrial production index (IPI) and money supply in assessing the performance of Malaysian REITs.

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