Impact of Inflation and Exchange Rate towards Foreign Direct Investment (FDI) in Construction Sector in Malaysia: An Empirical study on the cross-sectional data by using EViews, 1992 2012

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Abstract

The purpose of the studies is to investigate the impact of inflation and exchange rate towards Foreign Direct Investment (FDI) in Construction Sector in Malaysia. The construction reacts as important sectors in generating large income for people and revenue for the country. Therefore, FDI in construction sector can improve the quality of growth, and aid to achieving the goal of country development. In this study, the FDI in Construction Sector react as dependent variable and the independent variable are exchange rate and inflation rate in Malaysia. The primary contribution of this study can help both domestic and foreign firms to learn more about Malaysian economy and the FDI of Malaysia, particularly in construction sector. As this sector grows rapidly day-by-day, it is essential for investor and firms to understand more about the economic aspects, as well as the finance aspects. As these determinants may be proved to be significant towards FDI, the investor and firms can get such information and gain competitive advantage in the construction sector in Malaysia. The empirical analysis of this study was performed by using econometric methods that is Ordinary Least Square (OLS) regression which involved Augmented Dickey-Fuller (ADF) unit root test, and diagnostic tests, Heteroscedasticity Test model and Breush-Godfrey Serial Correlation LM Test. Lastly, the findings of this research paper have an important policy implications and show that all these issue may still need further devotion in future research.

Keywords: Malaysia, FDI, Construction sector, Inflation, Exchange Rate, Time series, Country Development

Introduction

This paper pays specific attention to the impact of inflation and exchange rate towards construction sector in Malaysia. Foreign direct investment (FDI) is widely considered as an amalgamation of capital, technology, marketing and management (Lokesha & Leelavathy, 2012). Based from the explanation of Ngowi et al (2006), infrastructure has relative to other capital-intensive industries undergone sharp government policy, public attitude and in the process attracted disappointingly low FDI. In addition, Karal & Onder (2013) said that FDI is an important tool in realizing the growth of economic objectives of countries. They further claiming that such instrument like FDI is particularly very essential for developing countries with limited capital and technical capacity. Such statement already allowed foreseeing that foreign direct investment is such an important "weapon" for every country, in order to boost the countries' economics, as well as the development. Like many developing countries, Malaysia embarked on the import-substitution (IS) strategy after its independence in 1957 with a view to achieve self-sufficiency and to create employment opportunities (Sharma et al, 2012). Sharma et al. (2012) was also claiming that there is no doubt that foreign direct investment (FDI) has contributed significantly to the transformation of the

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Malaysian economy, as reflected by the changing composition of its exports and the rising share of FDI in gross fixed capital formation (GFCF). As a result, the Malaysian economy has some reliance on FDI in terms to boost the nation's economy. In order to see that much deeper, in construction sector, such reliance is also well important too, as investment is one of the main capital such for construction sectors. In Malaysia, According to Jajri (2009), if Malaysia Ringgit (RM) was depreciating continuous, this would be indicated that there was an increase in the projected profit rate, which associated with the investment in Malaysia, which will attract the foreign investors to come over Malaysia. Such statement shows that exchange rate is such essential in foreign direct investment in Malaysia. When the Malaysian ringgit-dollar undergoes depreciation, comparative advantage shifts in favor of Malaysia because they become a low-cost country for production of several items.

Research Problem

Today, many countries especially least developed and developing countries, suffer from unemployment, population growth, economic recession and income inequality issues. All of the import and export transactions nowadays were performed at the market currency exchange rate (Lokesha & Leelavathy, 2012). Especially in construction sector, it requires major investment, as well as transactions and trade globally. Some of machineries and raw materials needed to be imported from foreign countries, as in Malaysia; there was lack of such technology on manufacturing or producing them, such as heavy duty machineries like excavators and crane. Recently, some of empirical research on FDI and exchange rate uncertainty has highlighted the confusing effects of exchange rate volatility on FDI. According to Froot et al (1991), they had thoroughly investigated this view, and part of their theory had the suggestion that claimed a strong home currency discourages and weaker currency motivated FDI in the country. High inflation and exchange rate indicated the failure of the government in terms of its ability, to balance its budget and the catastrophe of the central bank to implement appropriate monetary policy.

According to Sayek (1999), he described the negative relationship between inflation and FDI. Low FDI inflow was resulted by higher inflation in host country. Moreover, Lokesha & Leelavathy (2012) explained in the case for India that inflation was harmful to economic stability of the host country, and it was an indicator of internal economic pressure. In such environment, the government will be unable to balance the budget and currency will confine the money supply, as a result, it was causing to low FDI inflows in host country. According to Akinboade et al. (2006), they stated that low inflation was taken to be an indication of internal economic stability in the host country.

Research Objectives

1. To examine whether the exchange rate affect FDI in construction sector in Malaysia.
2. To inspect whether the inflation affect FDI in construction sector in Malaysia.

Research Methodology

This study employs empirical analysis to examine the determinant of Foreign Direct Investment (FDI) in construction sector in Malaysia, from 1992 to 2012. Annual data on foreign direct investment, exchange rate, and inflation are analyzed by using Ordinary Least Square (OLS) regressions.

OLS framework

$$\ln FDIit = \alpha + \beta_1 EXC_i + \beta_2 INF_i + \varepsilon_i \quad (1)$$

where the dependent variable is FDI. Based on the equation above, the positive sign of EXC and INF coefficients represent positive effects of exchange rate, and inflation on foreign direct investment in construction sector in Malaysia. A rise in EXC and INF will cause the FDI to decrease in construction sector in Malaysia, and vice versa. The hypothesis is stated below as:

Diagnostic Testing

Diagnostic testing is vital to check whether the series is free from autocorrelation, heteroscedasticity, and normality problem.

Augmented Dickey-Fuller (ADF) Test

The first step in constructing a time series data is to determine the non-stationary property of each variable. Test must performed for each of the series in the levels (log of FDI, log of EXC and log of INF) and in the first difference. All variables were tested in levels using Augmented Dickey-Fuller (ADF) Test. Consider the equation below:

$$\Delta\lambda_1 = \alpha_1 + \alpha_2 + \phi\lambda_{\tau-1} + \beta_1\sum_{i=1}^{m}\Delta\lambda X_{\tau-1} + \varepsilon_i \tag{2}$$

where λ is the variable of interest, Δ is the time trend and the difference operator, t is the time trend, and ϕ is the white noise residual of zero mean, constant mean, and constant variance; $(\alpha_1, \alpha_2, \beta_1, \dots\beta_m)$ is a set of parameters to be estimated. If the stationary test is significant, it implies that the variable series is stationary and does not have a unit root test. The null hypothesis will therefore be rejected, but the alternative hypothesis will be accepted. If the stationary test is significant, then the variable series is non-stationary and has a unit root test; thus, the null hypothesis will be accepted. The hypotheses for this study are as below:

$H_0: \phi \neq 0$ (λ_τ is stationary)   (3)
$H_1: \phi = 0$ (λ_τ is non-stationary) (4)

Data Collection Method

All of the variables involved in this study are measured in currency in terms of Malaysian Ringgit (RM). The data being collected will cover the period from the year of 1992 until 2012, and these data were obtained from the Thomson Reuters Datastream Professional and World Bank. Based from Thomson Reuters (2014), Thomson Reuters Datastream Professional is a tool that has the capability to integrate economic research and strategy, via cross asset analysis to effortlessly bring up together top down and bottom up in one single, assimilated application. The data collected for Foreign Direct Investment (FDI) in construction sector is measured by value of FDI and the currency for FDI is in terms of Malaysian Ringgit (RM). The data collected for exchange rate is measured by the exchange rate between Malaysian Ringgit (RM) and United States Dollar (USD), and it is in terms of Malaysian Ringgit as well.

Findings and Conclusion

OLS framework

In the second phase, Ordinary Least Square (OLS) regression was applied to analyze annual data on foreign direct investment, labor cost, exchange rate, market size represented by gross domestic product (GDP), and inflation. Table 2 presents the estimation model to examine the determinants of FDI in construction sector in Malaysia.

Table 1: Model Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.09352	1.08252	0.08639	0.9323
D(LNINF)	-5.581169	38.99983	- 0.14317	0.0481**
D(LNEXC)	2.596228	3 .642531	0.712754	0.4869
	R-squared	0.87248	**F-statistic**	0.358454
	Adjusted R-squared	- 0.156153	**Prob (F-statistic)**	0.834211
	Durbin-Watson stat		2.843284	

Note: *, **, *** are significant respectively to 1%, 5% and 10%

Based from Table 1, the results indicate that the value of t-statistic for the variable of inflation (INF) is significant at 5%, which means that the null hypothesis is rejected and the alternative hypothesis is accepted. From Table 1, we can derive the equation below as:

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FDI = 0.093522-5.581169INF   (3)

Based on the equation (3), what can be inferring that a one percent of increase in inflation in Malaysia can cause Foreign Direct Investment in construction sector in Malaysia to decrease by 5.58 %. Thus, it can be concluded that a higher inflation can contribute to a decrease in FDI in

construction sector in Malaysia. However, Exchange rate is not significant, as the probabilities variables already more than 0.05 significant levels. Therefore, the null hypotheses for exchange rate are accepted and the alternative hypotheses are rejected. These mean that there are no relationship between both and exchange rate with FDI in construction sector in Malaysia.

Table 2: Augmented Dickey-Fuller (ADF) Unit Root Test

Variable	Intercept st		Intercept + trend st	
	Level	1 difference	Level	1 differnce
FDI	-4.755436*** (0.0013)	-6.786046*** (0.0000)	-4.605086*** (0.0081)	-6.674855*** (0.0002)
EXC	-1.894671 (0.3278)	-4.448909*** (0.0028)	-1.440289 (0.8158)	-4.717696*** (0.0070)
INF	-1.654854 (0.4376)	-3.355809** (0.0264)	-2.105382 (0.5121)	-3.487394* (0.0697)
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INF	-1.654854 (0.4376)	-3.355809** (0.0264)	-2.105382 (0.5121)	-3.487394* (0.0697)

Note: *, **, *** are significant respectively to 1%, 5% and 10%

Table 2 shows the level and intercept for the variable of exchange rate, the results found under the intercept is non-stationary at the level and stationary at the first difference. For the level and intercept, the probability value is 0.3278, which has exceeded 10% and t-statistic value is -1.894671, which is not significant. Then, for the exchange rate, the first difference and intercept was stationary. The result between the first difference and intercept was given as following which is the probability value is 0.0028and t-statistic value is 4.448909, which is significant to 1 percent. Under the intercept with trend, the results obtained for the exchange rate show that the level is not stationary but become stationary in the first difference. The result for level and intercept with trend the probability value is given 0.8158and its t-statistic value is -1.440289, which is not significant to 10%. Lastly, for the first difference and intercept with trend was mentioned to be stationary, the probability value is 0.0070and its t-statistic value is -4.717696 which is significant to 1%. In contrast, for variable

of inflation, the results indicated under the intercept is non-stationary at the level but later become stationary at the first difference. For the level and intercept, the probability value is 0.4376, which has exceeded 10% and t-statistic value is 1.654854, which is not significant. However, the first difference and intercept was stationary. The result between the first difference and intercept was given as following, which is the probability value is 0.0264and t-statistic value is -3.355809, which is significant to 5 percent. Under the intercept with trend, the results showed for the variable of inflation show that the level is not stationary but was found stationary in the first difference. The result for level and intercept with trend the probability value is given 0.5121and its t-statistic value is -2.105382, which is not significant to 10%. Lastly, for the first difference and intercept with trend was mentioned to be stationary, the probability value is 0.0697and its t-statistic value is -3.487394 which is significant to 10%.

Diagnostic Test

The next stage is the last stage for the empirical analysis and empirical results, which is to run diagnostic test. Diagnostic testing was applied for the test, due to it is crucial to examine whether the series is free from autocorrelation, heteroscedasticity, and last but not least, normality problem. Table 3 presents two of the three diagnostic tests, which were Heteroskedasticity Test and Breush-Godfrey Serial Correlation LM Test.

Table 3: Diagnostic Test

Hetetoskedasticity Test	F-statistic: 0.452863(0.7689) Obs*R-squared: 2.155021(0.7073)
Breush-Godfrey Serial Correlation LM Test	F-statistic: 4.070625(0.0724) Obs*R-squared: 7.701768(0.1113)

Note: *, **, *** are significant respectively to 1%, 5% and 10%

Based on the diagnostic test in Table 3, the results propose that the model does not suffer from any autocorrelation and Heteroscedasticity. The result of Heteroscedasticity Test has shown a probability value of 0.7689, which is not significant at 5%, and has found 0.452863 for the F-statistic. Meanwhile, the Heteroscedasticity Test also found 2.155021 in Obs*R-squared, and the probability is 0.7073, which is also not significant at 5%. Besides that, the result of Breush-Godfrey Serial Correlation LM Test has shown a probability value of 0.0724, which is not significant at 5%, and has found 4.070625 for the F-statistic. At the same time, the Breush-Godfrey Serial Correlation LM Test also showed that a figure of 7.701768 in Obs*R-squared, and the probability is 0.1113, which is also not significant at 5%.

Hypothesis Results

Table 4: The Hypothesis Statement

No of Hypothesis	Statement of Hypothesis	Results
H1	There is a relationship between inflation and foreign direct investment (FDI) in construction sector in Malaysia.	Accepted
H2	There is a relationship between exchange rate and foreign direct investment (FDI) in construction sector in Malaysia.	Rejected

The results showed only inflation have achieved significant level. Lastly, diagnostic test had been performed in this research as well. The results indicated that the model does not suffer from any autocorrelation and heteroscedasticity, and also the series is normally distributed. Thus, the result from the diagnostic test model is inferred as reliable. Meanwhile, the exchange rate has negative impact to FDI that indicates a good sign to host country economics. This result supported by Jajri (2009), where by the continuous depreciation of the Malaysian ringgit would mean an increase in the anticipated profit rate associated with investment in Malaysia, which will attract the foreign investors around the world. When the Malaysian ringgit-dollar undergoes depreciation, comparative advantage shifts in favor of Malaysia because they become a low-cost country for production of several items.

Conclusion

The findings in this study are prominent for policy implementation, whereby all these variables may have correlation between each other in construction sector in Malaysia. Government should be focused and put more attention on inflation, as these determinants have significant relationship with the foreign direct investment in construction sector in Malaysia. There is no doubt that inflation played a huge role in FDI in construction sector, as inflation has been considered as the most important factor whenever investors are coming to bring in investment into Malaysia. If the labor cost in construction sector is being too high, it is hard to convince foreign investors to cash in into the construction sector in Malaysia. Nevertheless, the minimum wage policy should be well managed by the Malaysian government whereby increasing in labor cost cause a slump in the amount of FDI inflow in construction sector in Malaysia. Yearly proliferation of inflations will reduce the foreign investment from elsewhere significantly. Therefore, a much powerful monetary policy should be implemented by the Malaysian government annually as well. The supply of money into the public should be able to reduce the inflation rate in Malaysia, and this same goes in terms of currency as well. Despite Malaysian government introduced new monetary policy every year, however it is still not strong enough to reduce the inflation rate. Therefore, perhaps stronger monetary policy is probable to overcome the annually increasing inflation in Malaysia.

References

Akinboade, O. A., Siebrits, F. K., & Roussot, E. N. (2006). Foreign direct investment in South Africa. *Foreign direct investment in Sub-Saharan Africa. Nairobi: Origins, Targets Impact and Potential*.

Froot, K. A., Scharfstein, D. S., & Stein, J. C. (1993). Risk management: Coordinating corporate investment and financing policies. *the Journal of Finance*, *48*(5), 1629- 1658.

Jajri, I. (2009). Foreign direct investment and economic growth: Cointegration techniques. IUP *Journal of Managerial Economics*, 7(3/4), 7.

Karal, Z., & Onder, G. (2013). Determinants of Foreign Direct Investments Outflow From a Developing Country: the Case of Turkey. *Business, Management and Education*, (2), 241-255.

Lokesha, B.K., & Leelavathi, D.S. (2012). Determinants of foreign direct investments. A macro perspective. *Indian Journal of Industrial Relations, 47* (3), 459469.

Ngowi, A. B., Pienaar, E., Akindele, O., & Iwisi, D. S. (2006). Globalisation of the construction industry: a review of infrastructure financing. *Journal of Financial Management of Property and Construction*, *11*(1), 45-58.

Sayek, S. (1999). FDI and inflation: theory and evidence. *Duke University, Advisor: Kimbrough, Kent*.

Sharma, P. K., Jadhav, U. N., Singh, E. H., & Mahapatra, A. (2012). Foreign Direct Investment (FDI): An observation about tourism sector of Bhutan.