AAMC 2019
The 13th Asian Academy of Management International Conference 2019

FTSE WGBI, US BALANCE SHEET POLICY AND FOREIGN HOLDINGS OF MALAYSIA GOVERNMENT SECURITIES

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Abstract

On 15th April 2019, it was announced that FTSE Russell has placed Malaysia on the watch list in reviewing Malaysia position in the FTSE World Government Bond Index (WGBI). This announcement contributes to the current debates on the potential effects pertaining to Malaysia's future position in the WGBI especially its effect on foreign holdings of Malaysia Government Securities (MGS) as the recent data have shown Malaysia weight in the WGBI is equivalent to MYR 16.2 billion or 11% of foreign holdings of MGS. Hence, this research primarily aims to address these ongoing debates by investigating the direct effect of WGBI towards the level of foreign holdings of MGS in Malaysia. Further, this research will also investigate the effect of domestic or pull factors and the US balance sheet policy on the level of foreign holdings of MGS. This research employs monthly data from January 2008 until April 2018 and Autoregressive Distributed Lag (ARDL) method. The empirical results reveal that the inclusion of Malaysia in the WGBI has no significant effect towards the level of foreign holdings of MGS. Consistent with the literature, this research finds that US balance sheet policy is more significant in influencing the level of foreign holdings of MGS. Further, the positive and significant association between US balance sheet policy and foreign holdings of MGS indicates the need for the government of Malaysia to craft relevant policies to mitigate against the risks in the event of US balance sheet policy reversal.

1. Introduction

Since July 2007, Malaysia has been included in the FTSE World Government Bond Index (WGBI) (Citigroup Inc., 2007). Malaysia became the 23rd country to join this index back in year 2007 which saw the fulfilment of three criteria, which are the absence of barrier, market size of government bonds and minimum credit. WGBI is an index, which assesses the performance of sovereign bonds particularly involving fixed-rate, investment grade sovereign bonds. According to a quarterly bulletin released by the Central Bank of Malaysia during the second quarter of 2017, the inclusion of Malaysia in the WGBI index has been associated with increase in foreign investors' confidence in Malaysia's bond market (Abdullah & Mohamad Razali, 2017). Further, the report revealed that Malaysia is ranked second just behind Indonesia in having the biggest share of foreign bondholding among selected Asian countries such as Indonesia, Thailand, Japan and South Korea. However, it was announced on 15th April 2019 that FTSE Russell has placed Malaysia on the review list mainly due to bond and FX liquidity concerns for a potential of exclusion from the WGBI where the decision on the review will be discuss on September, 2019. As of March, 2019 Malaysia carried a weight of 0.39% in the WGBI which represented potential foreign holdings of MYR16.2 billion equivalents to 11% of foreign holdings of Malaysia Government Securities (MGS). Hence, the reports on the exclusion of Malaysia from WGBI has contributed to the current debates on the potential effect of the exclusion especially on the foreign holdings of bond in Malaysia.

Based on Figure 01, it can be seen that after the inclusion of Malaysia in the WGBI on July, 2007 there is an increasing trend of foreign holdings of MGS until mid-2008, indicating that the WGBI inclusion could be one of the factors. In the same Figure 01, it can also be observed that during the period of US Quantitative Easing (QE) implemented by US from QE1 until QE3, there was also an increasing trend of foreign holdings of MGS, which signifies that US balance sheet policy spillover could be transmitted to Malaysia during the period. Further, Figure 02 shows that the foreign holdings of MGS and WGBI especially throughout the duration of the financial crisis in year 2008 have similar trend that is an increasing trend which also can be seen from year 2013 until 2018 as both are moving in tandem signifying a correlation between the trends of both variables. Hence, based on these two figures it is clear that there is a need to investigate the effect of WGBI on the foreign holdings of MGS. Further, the association of trends between the push factors of WGBI and also the effect of US balance sheet policy implementation with the foreign holdings of MGS raises question on whether there is indeed a significant relationship among these variables that could lead to an increase in foreign holdings of MGS as outcome from the investigation of the relationships will help to assist policymakers in Malaysia to craft relevant policies on mitigating the risk of large outflow of capital especially involving MGS.
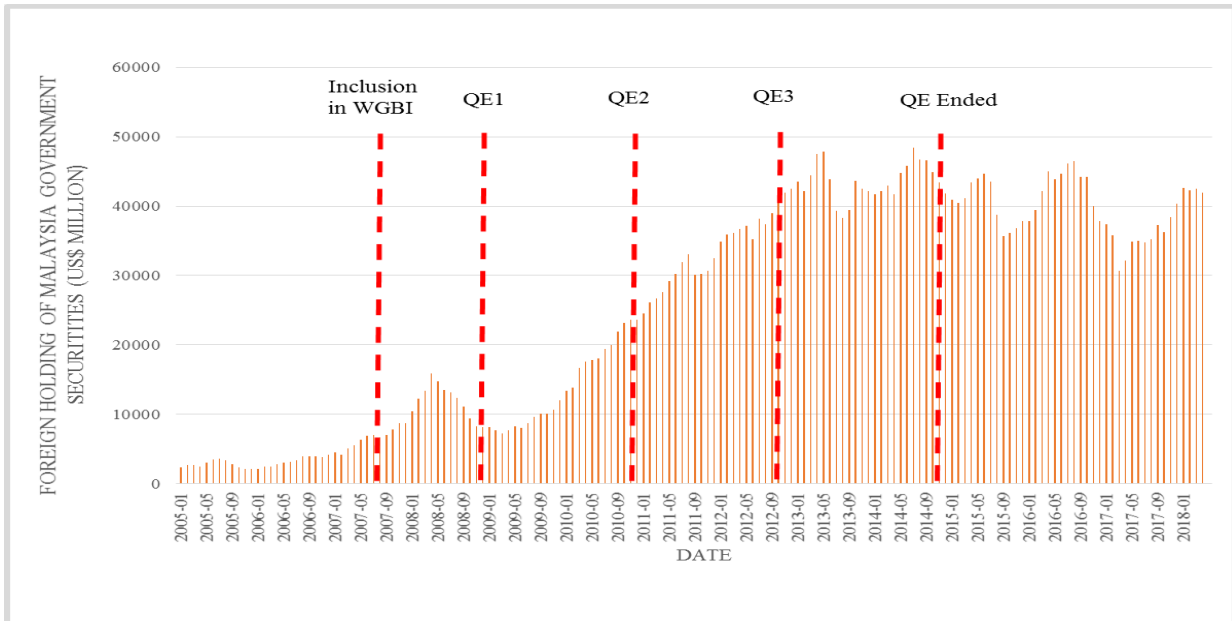
Figure 01. Foreign Holdings of Malaysia Government Securities, Inclusion of Malaysia in FTSE World Government Bond Index (July, 2007), US Quantitative Easing
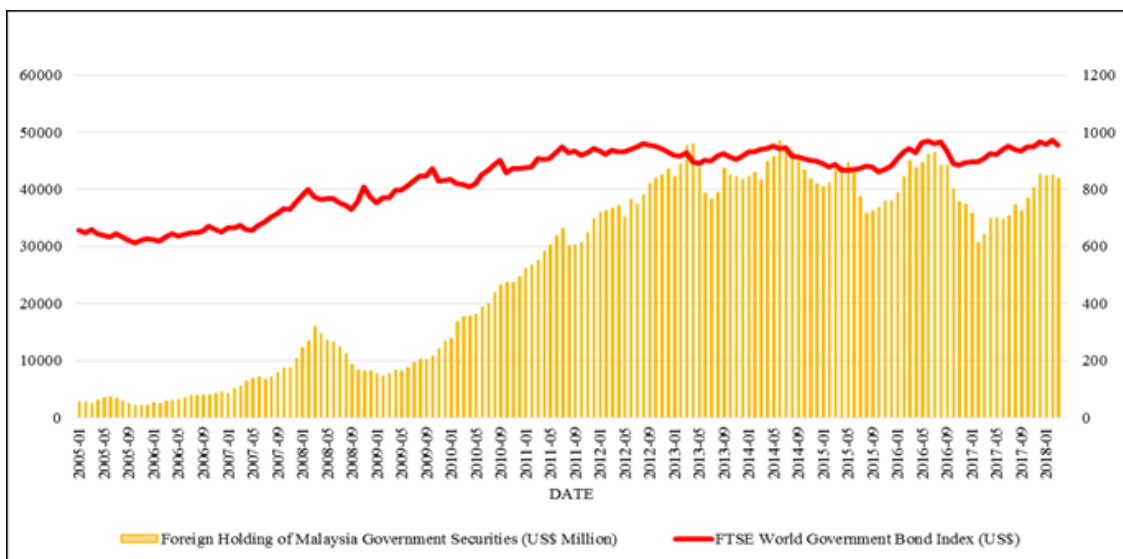

Figure 02. Foreign Holdings of Malaysia Government Securities, FTSE World Government Bond Index

2. Problem Statement

Past studies by (Hannan, 2017; Koepke, 2018) find both factors which are push and pull to be significant in driving the flows of capital into EMEs. Koepke (2018), reveals that both factors are vital in effecting the level of bond flows in EMEs where factors such as inclusion in stock index and United States of America (US) monetary policy expectations should be taken into consideration in examining the drivers of bond flows in EMEs. In addition, (Ahmed et al., 2017; Ghosh et al., 2014; Horioka et al., 2016; Mishra et al., 2014; Moore et al., 2013; Punzi & Chantapacdepong, 2017; Yoon & Hurlin, 2014) found that the capital inflows into EMEs can be associated with strong macroeconomic fundamentals of the country such as strong GDP growth, deeper financial markets, lower current account deficit and higher government bond

yields. In the caveat of foreign investors' appetite for EMEs assets, Ghosh et al. (2014) further argued that foreign investors are more responsive towards global factors whereby in terms of the global market in the event of uncertainty happening it will cause liability flow to surge in EMEs. This particular study highlights that foreign investors are more prone to sell their assets in EMEs in the event of global uncertainty. Other researchers have focused on the impact of inclusion in the WGBI towards capital flows in EMEs (Moore et al., 2013; Ramírez & González, 2017). Moore et al. (2013) found that the inclusion in the WGBI has a significant effect in increasing the flows of capital in EMEs. In contrast, Ramírez and González (2017) found that inclusion in the WGBI played no significant role in effecting capital flows into EMEs whereby the study further revealed that the US unconventional monetary policy is more significant than the inclusion in WGBI in driving flows of capital into EMEs. With respect to that, this study contributes to enriching the ongoing debates of factors that can cause capital flows into EMEs where in this study the direct effect on Malaysia will be investigated, assessing the direct effect of Malaysia inclusion in WGBI towards the foreign holdings of MGS and employing the US Federal Reserve total assets as the instrument to represent US balance sheet policy.

3. Research Questions

1. What is the effect of push and pull factors toward the level of foreign holdings of Malaysia Government Securities (MGS)?
2. Does the FTSE World Government Bond Index (WGBI) has significant effect towards the level of foreign holdings of Malaysia Government Securities (MGS)?

4. Purpose of the Study

1. To investigate the effect of push and pull factors toward the level of foreign holdings of Malaysia Government Securities (MGS).
2. To investigate the effect of WGBI towards the level of foreign holdings of Malaysia Government Securities (MGS)?

5. Research Methods

This research employs monthly data from January, 2008 until April, 2018 which involves 124 observations in total. Data for this research are obtained mainly from Bank Negara Malaysia for pull or domestic variables of foreign holding of MGS, industrial production index, trade balance, 10-Year maturity rate of MGS, while data for Malaysia consumer price index is from International Monetary Fund (IMF) databank. As for the push or global variables, the FTSE WGBI is from Bloomberg Terminal while Federal Reserve of Bank of St. Louis is the source for the US total assets. This research has employed Autoregressive Distributed Lag (ARDL) approach to co-integration which was introduced by Pesaran et al. (2001) to assess if all the variables long-run relationship. Foreign holdings of Malaysia Government Securities (FHOMGS) acts as the dependent variable for this research, and the independent variables constituting the pull factors are the consumer price index of Malaysia (CPI), industrial production index of Malaysia (IPI), trade balance of Malaysia (TB), and 10-Year maturity rate of MGS (MY10). As for the

push factors, changes in FTSE World Government Bond Index (WGBI) and US Total Assets (USTA) are employed in the model. The ARDL is employed due to its advantages of explaining the model in both the short-run and also the long-run association. Whereby, the employed baseline model is specified in equation 5.1:

$$\Delta lnFHOMGS = \beta_0 + \sum \beta_1 \Delta ln\, FHOMGS_{t-i} + \sum \beta_2 \Delta ln\, CPI_{t-i} + \sum \beta_3 \Delta ln\, IPI_{t-i} + \sum \beta_4 \Delta ln\, TB_{t-i} +$$
$$\sum \beta_5 \Delta MY10_{t-i} + \sum \beta_6 \Delta WGBI_{t-i} + \sum \beta_7 \Delta ln\, USTA_{t-i} + \alpha_1 lnFHOMGS_{t-1} + \alpha_2 ln\, CPI_{t-1} +$$
$$\alpha_3 ln\, IPI_{t-1} + \alpha_4 ln\, TB_{t-1} + \alpha_5 MY10_{t-1} + \alpha_6\, WGBI_{t-1} + \alpha_7 ln\, USTA_{t-1} +$$
$$\mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(5.1)$$

Where β_0 is the drift component, $lnFHOMGS$ is the natural logarithm of the foreign holdings of Malaysia Government Securities, $ln\, CPI_t$ represents consumer price index natural logarithm which act as proxy for Malaysia inflation level, $ln\, IPI_t$ is the natural logarithm of Malaysia industrial production index, $ln\, TB_t$ is the natural logarithm of Malaysia trade balance, $ln\, USTA_t$ represents the natural logarithm of US total assets, while μ_t represents error term or white nose residual. According to Pesaran et al. (2001), in examining all the variables long-run association where the model is assesses through bound test approach where the model is tested using F-test through the coefficients of joint significance of lagged level variables. Further, there will be two sets of critical values which are the lower critical bound $I(0)$, and the upper bound $I(1)$ in the bound test approach. Co-integration exists when the F-statistics generated is more than the upper bound where the null hypothesis of H_0: $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7$ will be rejected signifying that between all variables there is existence of long-run association. Then, the employed model will be expanded through Error Correction Model (ECM) as specified in equation 5.2:

$$\Delta lnFHOMGS = \beta_0 + \sum \beta_1 \Delta ln\, FHOMGS_{t-i} + \sum \beta_2 \Delta ln\, CPI_{t-i} + \sum \beta_3 \Delta ln\, IPI_{t-i} + \sum \beta_4 \Delta ln\, TB_{t-i} +$$
$$\sum \beta_5 \Delta MY10_{t-i} + \sum \beta_6 \Delta\, WGBI_{t-i} + \sum \beta_7 \Delta ln\, USTA_{t-i} + \qquad \lambda EC_{t-1} \qquad +$$
$$\mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.....(5.2)$$

6. Findings

6.1. Descriptive statistics

In Figure 03, lnFHOMGS illustrated a growing trend from 2009 to 2012. This trend was in tandem with lnUSTA. The movements in lnCPI and lnIPI were quite stable during the same period. Meanwhile, the WGBI, 10- MY10 and lnTB showed volatile trends during this period. The lnFHOMGS reached its highest point in July, 2014 at 10.79%, which was attributed to the strong performance of Malaysian economy and improved global outlook in year 2014 (Bank Negara Malaysia, 2015).
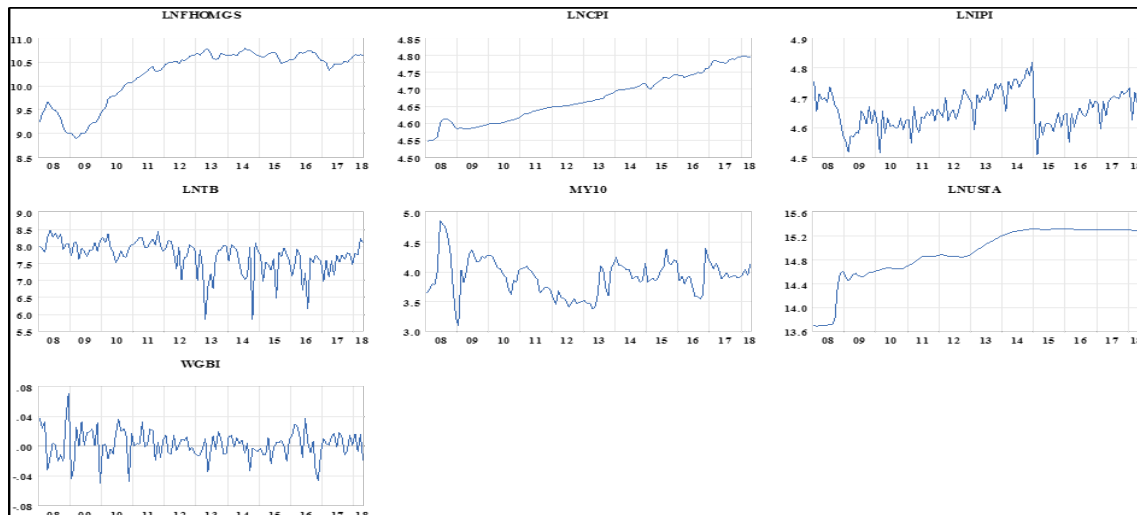
Figure 03. Trends of lnFHOMGS, lnCPI, lnIPI, lnTB, MY10, lnUSTA, WGBI

6.2. Lag order selection

Table 01 demonstrates that the model will employ an optimal lag length of 5 as selected by Akaike Information Criterion (AIC). This selection is based on the criterion with the lowest value. Hence, the ARDL specification of the model is (2, 2, 4, 2, 1, 4, 4).

Table 01. Results of Lag Order Selection

Lag	AIC
0	-9.446916
1	-22.72628
2	-23.30985
3	-23.18970
4	-23.26511
5	-23.48293*
6	-23.41293

Notes: * denotes the lag order selected by Akaike Information Criterion.

6.3. Unit root test

In Table 02, the unit root tests results indicate lnTB, MY10, and WGBI and are statistically significant at 1% level when intercept is included. When both trend & intercept are included, only lnCPI, lnTB, MY10 and WGBI are statistically significant at level. When both trend and intercept are excluded, all variables are statistically insignificant except for WGBI which is significant at 1% level. On the other hand, at the first difference level, all variables are significant at 1% level except for lnIPI when trend & intercept is included (significant at 5% level), lnUSTA when intercept is included (significant 10% level) and lnUSTA when none is included (significant at 5% level). These results indicate that all variables are stationary at different orders of integration *I(0)* and *I(1)*. Therefore, ARDL estimation can be utilised for this model.

Table 02. Results of Augmented Dickey Fuller (ADF) Tests

Variables	Intercept	Trend & Intercept	None	Intercept	Trend & Intercept	None
Level				First Difference		
lnFHOMGS	-1.2354(1)	-1.2467(1)	1.0045(1)	-7.3231(0)***	-7.3191(0)***	-7.2453(0)***
lnCPI	-0.3941(4)	-3.7022(4)**	3.0831(4)	-5.8363(3)***	-5.8107(3)***	-4.9371(2)***
lnIPI	-1.9854(12)	-2.1622(12)	0.6503(12)	-4.0083(11)***	-3.8948(11)**	-4.0048(11)***
lnTB	-4.2303(1)***	-4.9384(1)***	-0.3403(3)	-6.3258(7)***	-5.7745(10)***	-6.3493(7)***
MY10	-3.8899(0)***	-3.8929(0)**	-0.5088(7)	-10.3524(0)***	-10.3076(0)***	-10.3925(0)***
WGBI	-10.6118(0)***	-10.6088(0)***	-10.5430(0)***	-7.0214(9)***	-6.9869(9)***	-7.0588(9)***
lnUSTA	-2.2420(10)	-0.8534(11)	1.3347(11)	-2.8170(10)*	-5.7613(9)***	-2.4874(10)**

Note: *, ** and *** denote the level of significance at 10%, 5% and 1% respectively. Figure in parentheses represents the lag length.

6.4. Autocorrelation test

Table 03 shows the autocorrelation test results. As the p-value of Chi Square is 0.9394 and greater than 0.05, the null hypothesis of no autocorrelation cannot be rejected. This indicates that the model does not suffer from autocorrelation.

Table 03. Results of Autocorrelation Test

Models	F-Statistic	Prob. Chi Square	Results
F(lnFHOMGS$_t$, lnCPI$_t$, lnIPI$_t$, lnTB$_t$, MY10$_t$, WGBI$_t$, lnUSTA$_t$)	0.188259	0.9394	H$_0$ is not rejected

6.5. CUSUM and CUSUMSQ tests

In Figure 04, CUSUM and CUSUMSQ tests are utilised to test the stability of the model. The results for these tests indicate that model is stable at 5% significance level as the statistical tests (blue lines) are inside the upper and lower critical bands of 5% confidence intervals.
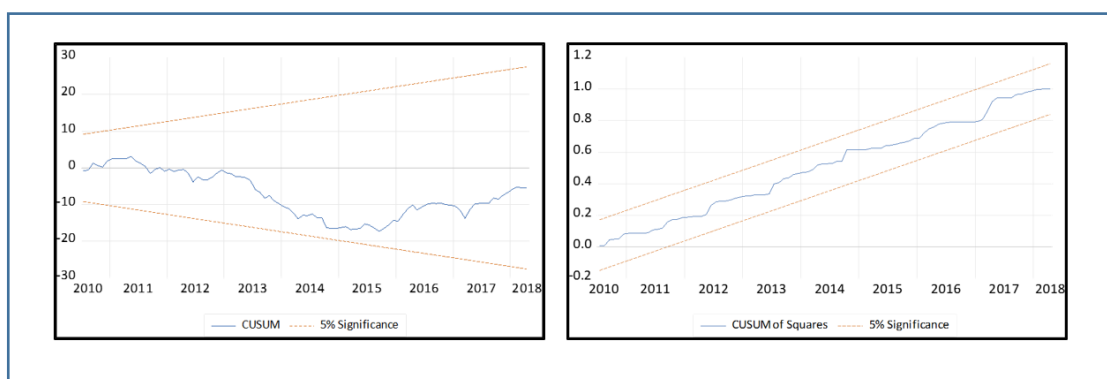

Figure 04. CUSUM and CUSUMSQ Tests

6.6. Bound test approach

In Table 04, it can be seen that the F-statistic value is 4.6917, implying that there is a co-integration in the model at 1% significance level. Hence, an Error Correction Model (ECM) will be estimated to confirm the long-run association.

Table 04. Results of Bound Test Approach

Model	F-statistic	Level of Significance	Bound test critical values	
			I(0)	I(1)
F($lnFHOMGS_t$, $lnCPI_t$, $lnIPI_t$, $lnTB_t$, $MY10_t$, $WGBI_t$, $lnUSTA_t$)	4.6917****	10%	1.99	2.94
		5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99

Note: *** and **** denotes level of significance at 2.5% and at 1% respectively.

6.7. Error Correction Model (ECM)

As reported in Table 05, the ECM coefficient is negatively (-0.041466) significant at 1% level, suggesting that all variables are able to move towards long-run equilibrium with the speed of adjustment of 4.15%. Further, this result also confirms the existence of cointegration among the variables.

Table 05. Results of Error Correction Model (ECM)

Models	Variable: CointEq(-1)*			
	Coefficient	Standard Error	T-Statistic	Probability
F($lnFHOMGS_t$, $lnCPI_t$, $lnIPI_t$, $lnTB_t$, $MY10_t$, $WGBI_t$, $lnUSTA_t$)	-0.041466	0.006530	-6.350506	0.0000***

Note: *** denotes level of significance at 1%.

6.8. Long-run coefficients

The findings in Table 06 demonstrate that all variables in the model are statistically significant except for lnCPI, lnIPI and WGBI. The coefficient for lnTB is positive and significant at 10% significance level indicating that a 1% increase in lnTB will result in 0.96% increase in the foreign holdings of MGS. A negative relationship is found between MY10 and lnFHOMGS. The coefficient is negatively statistically significant at 10% significance level. This indicates that lnFHOMGS is expected to fall 0.7% following a 1% rise in 10-Year maturity rate of MGS. Lastly, the variable of lnUSTA exhibits 1% significance level which suggests that a 1% increase in the lnUSTA can give rise to the foreign holdings of MGS by 2.39%. As a summary, the long-run model can be derived from the results in Table 06 as follows:

$$lnFHOMGS = -17.1822 - 7.9505lnCPI + 3.005lnIPI + 0.9602lnTB^* - 0.7040MY10^* +$$
$$21.1611WGBI + 2.860lnUSTA\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (6.1)$$

Table 06. Results of estimated Long-Run Coefficients for the Model

Variables	Coefficient	Standard Error	T-Statistic	Probability
lnCPI	-7.950494	4.926432	1.613844	0.1099
lnIPI	3.005005	2.224986	1.350572	0.1801
lnTB	0.960218	0.505192	1.900701	0.0604*
MY10	-0.704032	0.412895	-1.705110	0.0915*
WGBI	21.16109	17.92529	1.180516	0.2408
lnUSTA	2.385986	0.882120	2.704832	0.0081***
C	-17.18215	14.56098	-1.180014	0.2410

Note: *, ** and *** denote the level of significance at 10%, 5% and 1% respectively.

7.   Conclusion

In this research, the primary aim was to investigate the effect of WGBI towards the level of foreign holdings of MGS. The findings show that long-run association exist among the foreign holdings of MGS (lnFHOMGS), Malaysia trade balance (lnTB), 10-Year maturity rate of MGS (MY10) and US total assets (lnUSTA). In terms of lnTB, the result revealed that the Malaysia trade balance has a positive and significant effect on foreign holdings of MGS. This notion is in agreement with Burger et al. (2015), where they argued that current account balance is positively associated with the inflows of capital into a country. As for MY10, the result indicated that the 10-Year maturity rate of MGS has a negative relationship with foreign holdings of MGS. This result is consistent with those obtained by Bhattarai et al. (2018) where they found that when the US raised the total assets in the Zero Lower Bound period, investors seeked for higher yield in EMEs assets which could cause the asset price to face upward pressure and indirectly lead to the fall of the long-term yields in EMEs. Lastly, the result of the lnUSTA in this research is also consistent with that of Bhattarai et al. (2018). They showed that during the period of US balance sheet policy there will be spillovers effect causing capital to flow into EMEs.

Based on the results in this research, it can also be seen that the results for the consumer price index of Malaysia (lnCPI) and industrial production index of Malaysia (lnIPI) are statistically insignificant, indicating that both of these variables have no significant effect in influencing the level of foreign holdings of MGS (lnFHOMGS). This result is in line with that of Kim et al. (2013) where they found that in terms of looking at domestic factors effect on overall capital flows particularly involving a specific market, the effect of both inflation and gross domestic product are statistically insignificant. Further, these results can be attributed to other pull factors which have more prominent role in effecting the level of foreign holdings of MGS as shown in the results which are Malaysia trade balance and 10-Year maturity rate of MGS. According to Bank Negara Malaysia Annual Report, positive current account balance and sufficient international reserves are important domestic factors for mitigating against the occurrence of reversal in the capital flows of Malaysia financial markets (Bank Negara Malaysia, 2019). This is in agreement with that of Abdullah et al. (2010) where they found that the current account is the prominent factor driving the flows of international capital into Malaysia.

More importantly, this research shows that the inclusion of Malaysia in the WGBI has no significant effect on the foreign holdings of MGS. This indicates that if Malaysia is excluded from the WGBI, the foreign holdings of MGS will not be affected. Further, this research also reveals that the US balance sheet policy plays a more significant role in affecting the level of foreign holdings of MGS. These results further support the findings of Ramírez and González (2017) where they argued that the US balance sheet policy is vital for driving the inflows of capital into EMEs. They also revealed that the WGBI inclusion is not a significant driver for the inflows of capital into EMEs. Taken together, this research provides significant implications for the understanding of how the WGBI inclusion and the US balance sheet policy affect the foreign holdings of MGS. Hence, as Malaysia is expected to receive direct adverse effect from the reversal of the US balance sheet policy, Malaysia has to maintain strong macroeconomic fundamentals, positive current account and competitive maturity rate of 10-Year MGS to mitigate against the risks from the normalisation of the US balance sheet or a prolonged low US interest rates.

Acknowledgments

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