SOVEREIGN CREDIT RATINGS AND MACROECONOMIC VARIABLES: AN EMPIRICAL ANALYSIS ON DYNAMIC LINKAGES IN MALAYSIA

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ABSTRACT

This paper aims to investigate the long- and short-run relationship of sovereign credit ratings in Malaysia. This study employed quarterly data from 1991 to 2004. A robust and recent time series techniques known as the Unrestricted Error Correction Model – Bound Test was used which is applicable irrespective of whether the regressors are I(0) and I(1). The results show that in the long-run, Debt to GDP, Debt Service to Reserves and US Treasury Bill rate (3-months) appear to have significant impact to Malaysia sovereign credit ratings. The findings of the study show that Malaysia’s long-term ability to pay its debt contains information for prediction of the credit rating.

Key Words
Sovereign credit rating, macroeconomic variables, Autoregressive Distributed Lag (ARDL), cointegration.

1.0 INTRODUCTION

Forces of the globalization and liberalization in world market have almost become a cliché nowadays. Besides that, our economy has now becomes smaller with no gap or borderless. Malaysia as an open and free country does not deny the importance of capital inflow to generate development of the economy. Basic principle of economic theory that mention on a scarce of resources which is not enough to accommodate by unlimited preferences has been proven. However, there is an alternative or option to resolve the scarcity problem. One of the alternatives is getting the fund from abroad to support the productive activities. Issuing bond in international market or in other words getting capital or source by borrowing from international market may help a country to resolve or reduce a problem in scarcity resources. Sovereign credit rating, rated by rating agencies is very important for bond issuer in order to get as much fund from international market. There are several factors that are taken into account by rating agency to determine the ratings.

Malaysia has experience and been rated for several level of rating based on its economy performance as well as political stability. Since 1994 to 1997, Malaysia has been rated the highest rating which indicates Malaysia with lower risk on its sovereign bonds supported by bullish economy during the period (Figure I). However, prior to 1997 financial crisis contagion effect from Thailand and Indonesia, a downturn in Malaysia economy had affected the sovereign ratings as Malaysian was rated at BBB- in Q3 1998 which is the worst and lowest rate in the country’s history. Recovery
policies implemented by the government later were successful and resulted in upgrading the ratings to A-. Malaysia strong and improving economic fundamentals had led to several sovereign-rating upgrades in 2004. During the year, Malaysia’s sovereign ratings were further upgraded by several credit rating agencies. In January 2004, Rating and Investment Information Inc. upgraded Malaysia long-term foreign currency rating to A- from BBB+. While in May 2004, Standard & Poors reaffirmed Malaysia’s long-term foreign currency sovereign credit rating at A-. Fitch International assigned a positive outlook to Malaysia’s rating to A-, from BBB+ with a stable outlook on 8 November 2004. After assigning the outlook for Malaysia’s sovereign ratings to positive from a stable outlook in Feb 2004, Moody’s Investor Service upgraded the rating further to A3, from Baa1 in Dec 2004 (Bank Negara Annual Report, 2004).

Credit rating is a published ranking of one’s financial history, specifically as it refers to one’s ability to meet debt obligations. The highest rating is usually AAA, and the lowest is D. Normally lender use this information to decide whether to approve a loan. Specifically, credit ratings provide an evaluation of credit risk. Ratings are based on information supplied by ‘issuer’ or agent and information from reliable resources. Ratings are designed exclusively for the purpose of grading bonds according to their credit risk. It does not take into consideration factors such as the direction of future market price or the risk parameter of the investor.

Normally, two types of rating are produced by credit ratings agency which is issuer ratings or sovereign ratings and debt ratings. Issuer or sovereign ratings indicate the capacity of the government to fulfill its debt obligation in full and on time. On the other hand, debt rating indicates the specific credit standing of individual debt instruments.

However, in this study, we will focus on the sovereign ratings for Malaysia. The sovereign debt rating business continues to be dominated by three credit rating agencies worldwide; Standard & Poor, Moody’s and Fitch Inc. The agencies will be given a contract by national authorities who wish to float bond issues internationally and sometimes it could be a pre-requisite for issuing sovereign bond.

Rating process
The rating process starts with an assemble a team of analyst from rating agency to gather information from the issuer such as management policies, other credit factor and potentially factor, operating plans as well as performance of the country. Then, they will present all the relevant information to the rating committees to decide on decision of the ratings. The rating agency will inform, not to discuss the issuer regarding on the rating that had been decided before announcement been made to the public. Nevertheless, occasion may arise where fundamental disagreement exists between the issuer and rating agency. Appeal shall be resolve by a new rating committee. Rating agency may review the rating when the issuer can provide relevant new information. Rating under appeal would be placed on CreditWatch. In CreditWatch list, a rating would be replaced when a significant event or deviation from expected trend has occurred. There is no appeal for any CreditWatch listing.
Therefore this paper tries to investigate the long- and short-run relationship of sovereign credit ratings in Malaysia employing quarterly data over the period 1991-2004 by using a robust and recently developed Autoregressive Distributed Lag (ARDL) cointegration method which is applicable whether the regressors are I(1) or I(0). This paper consists of five parts. Section 2 reviews on the relevant empirical literature. The data and ARDL cointegration methodology are explained in section 3. The empirical results are presented in section 4. The last section concludes the paper.

2.0 REVIEW OF LITERATURE

Most of the studies in the past examined the determinants of spread for sovereign debt whereas only a few are devoted on determinants of credit ratings. Since changes in sovereign credit ratings have effects on bond yield spreads and variations in bond yield spreads also have effect on sovereign credit ratings, one could expect the determinants of the ratings to be similar to the determinants of the spread (see International Monetary Fund, 1999; Larrain et. al., 1997; Reisen and Von Maltzan, 199; Mora, 2001). Both are also commonly used as measures of country risk or default risk.

Previous studies have provided support for the basic premise that ratings are significantly linked with selected economic fundamentals. However, most of the studies are cross-country analyses and only few are dedicated to a particular country.

Cantor and Parker (1996) suggested the first quantitative assessment of the determinants of sovereign ratings. They used a linear transformation on the ratings of 35 developed and developing countries for a single year and results were derived with OLS estimations. They concluded that income per capita, GDP growth, inflation rate, external debt relative to exports, economic development and default history explained roughly 90% of sample variation. A study by Afonso (2002) used linear and logistic transformation on the ratings of 81 developed and developing countries leads to the similar findings. It is also highlighted that external debt is basically relevant to developing countries.

Ferri et. al. (1999) and Chambers (2001) suggested that short-term debt to reserves is a significant variable apart from variables specified in the study of Cantor and Parker (1996) as they found that their results are not robust over time and especially not for the ratings changes during the East Asian crisis.
Edwards (1983, 1985) used random effects components estimation and suggested that the spread was determined by the reserves-to-GNP, debt-to-GDP and debt-service ratios. Min (1998) analyzed the economic determinants of yield spreads of US dollar denominated, fixed income securities of emerging markets issued between 1991 and 1995. The researcher suggested that cross country differences in bonds spreads are determined by the debt-to-GDP, reserves-to-GDP and debt-service-to-exports ratios, as well as by the import-export growth rates, the inflation rate, the net foreign assets, the terms of trade and the real exchange rate. Min (1998) concluded that developing economies seeking greater access to international bond markets, should aim to improve their macroeconomic fundamentals.

Eichengreen and Mody (1998) analysed data of almost 1000 developing country bonds issued between 1991 and 1996 while paying special attention to selection bias. They found that the launch spreads depend on the issue size, the credit rating of the issuer, and on the debt-to-GDP and debt-service-to-exports ratios. Their main conclusion is that changes in market sentiment, not obviously related to fundamentals, have moved the market by large amounts over short periods.

Goldman Sachs (Ades et. al. (2000)) modeled emerging markets sovereign’s fair value spreads as a function of economic variables, analyzing monthly data from 15 emerging market economies from January 1996 until May 2000 using a panel data technique. The data was pooled for all countries in the sample and the authors found a number of variables to have a significant impact on the sovereign spread, such as the GDP growth rate, total external amortizations as a ratio of foreign reserves, the external-debt-to-GDP ratio, the fiscal balance, the exports-to-GDP ratio, the real exchange rate misalignment, international interest rates and the default history of the country.

Rowland and Toress (2004) investigated the determinants of the spreads of 16 emerging market sovereign issuers, using a panel data technique. They concluded that for both the spread and the creditworthiness, significant explanatory variables include the economic growth rate, the debt-to-GDP ratio, the reserves-to-GDP ratio and the debt-to-exports ratio. In addition, the spread is also determined by the exports-to-GDP ratio, and debt service to GDP, while the creditworthiness is influenced by the inflation rate and a default dummy variable.

Among studies done on single-country analysis are Budina and Mantchev (2000), Nogues and Grandes (2001) and Rojas and Jaque (2003).

Budina and Mantchev (2000) used a cointegration framework and concluded that, in the long run, gross foreign reserves and exports had a positive effect on bond price, and the real exchange rate and Mexico’s nominal exchange rate depreciation had a negative effect.

Nogues and Grandes (2001) used an estimation technique developed by Pesaran, Shin and Smith (2001) concluded that the Mexican crisis, the debt-service-to-export ratio, the GDP growth rate, the fiscal balance and the 30-year US Treasury yield had significant impact on the spread.

Rojas and Jaque (2003) used OLS estimation found significant impact on the spread of the debt-to-reserves ratio, exports, economic activity and US interest rates. However, there are critics on the validity of the results, as they do not take into account for the non-stationary of the variables used in the study.

3.0 MODEL, DATA AND METHOD

In general, there are a lot of factors that may influence and has been take into account by the rating agency to rate a country sovereign creditworthiness. In their rating criteria, the main rating agencies list numerous economic, political and social factors that underlie their sovereign credit ratings. Based on previous studies, a number of variables as potential determinant have been divided into three major categories namely solvency, liquidity and external shocks variables. The solvency variables refer to the country’s long–term ability to pay its debt. While the ability to pay country short-term debt deal
with liquidity variables. In this context, countries that can service its long-term debt might also have possibilities to default in its short-term debt. In this study, variables that represent external shocks to the economy also been examined. As an open economy, Malaysia has strong and wider linkages with the rest of the world as well as the contagion risk. Therefore, international condition might give a significant impact to Malaysia economy to a lesser extent, credit ratings.

In this empirically study, a linear function model is estimated employing explanatory variables to determine the long-run dynamic linkages.

Sovereign ratings = \( f (\text{Solvency variables, Liquidity variables, external shocks}) \)  

This study employs seven independent variables in order to investigate relationship with sovereign ratings. External debt to GDP ratio, external debt to export ratio and current account balance as a percentage of GDP may represent the solvency variable. Meanwhile, for liquidity variables, short-term debt to reserve ratio, debt service to exports ratio, debt service to reserve ratio has been chosen to determine the potential linkages with sovereign ratings. US Treasury bill rate (3-month) will represent for external shocks ‘imported’ from the rest of the world.

\[
\text{Ratings} = f (\text{Debt / GDP, Debt / Exports, } \text{CAB / GDP, STD / Re sv, UST 3, Debtser v / Re sv, Debtser v / Exports})
\]

\[
\text{LogRatings} = \alpha_0 + \log(\text{Debt / GDP}), + \log(\text{Debt / Exports}), + (\text{CAB / GDP}), + \\
\log(\text{STD / Re sv}), + \log(\text{UST3}), + \log(\text{Debtser v / Re sv}), + \\
\log(\text{Debtser v / Exports}), + e_t
\]

All the independent variables data are taken from various issues of Quarterly Bulletin, produced by Bank Negara from 1991Q2 until 2004Q4. Meanwhile, sovereign ratings for Malaysia are gathering from various publications from 1983 until 2005. Since the observations are on quarterly basis, for maximum order of the lags in the ARDL model, we choose lags of 4. In addition, ratings given by Standard & Poor and Moody’s are transformed into numerical values, which is linear transposition of rating scales.

The ARDL bound test (Pesaran, Shin and Smith, 2001) is being employed for cointegration analysis since it can be applied irrespective of whether the regressors are purely I(0), purely I (1), or mutually cointegrated. Moreover, it is unnecessary that the order of integration of the underlying regressors be ascertained prior to testing the existent of a level relationship between two variables (Pesaran et al., 2001, p. 315). Moreover, the bounds testing procedure (Pesaran et al., 2001) employed in this study is robust for small sample study (Pattichis, 1999; Mah, 2000; and Tang and Nair, 2002). Furthermore, the bound testing approach is possible even when the explanatory variables are endogenous (see Alam and Quazi, 2003, p.93). The ARDL cointegration test, assumed that only one long run relationship exists between the dependent variable and the exogenous variables (Pesaran, Shin and Smith, 2001, assumption 3). To test whether this is indeed appropriate in the current application, we change the entire variable to be dependent variable to compute the F-statistic for the respective joint significance in the ARDL models.

The bound test is basically computed based on an estimated of unrestricted error-correction models (UECM) or error correction version of autoregressive distributed lag (ARDL) model, by Ordinary Least Square (OLS) estimator (Pesaran et al., 2001).

Basically, the bound test developed by Pesaran et al. (2001) is the Wald test (F-statistic version of the bound testing approaches) for the lagged level variables in the right-hand side of UECM. That is, we test the null hypothesis of non-cointegrating relation (Ho: \( \delta_1=\delta_2=\delta_3=\ldots=\delta_8=0 \)) by performing a joint
significance test on the lagged level variables. The asymptotic distribution of the F-statistic is non-
standard under the null hypothesis of no cointegrating relation between the examined variables,
irrespective whether the explanatory variables are purely I(0) or I(1).

Under the conventionally used level of significance such as 10%, 5% and 1%, if the statistic from
Wald test falls outside the critical bounds value (lower and upper values), a conclusive inference can
be made without considering the order of integration of the explanatory variables. If the F-statistic
exceeds upper critical bound, then the null hypothesis of no cointegrating relation can be rejected. If
the test statistic (F-statistic) falls below the lower critical bound, we cannot reject the null of non
cointegration. In the case, the F-statistic falls between the upper and lower bounds, a conclusive
inference cannot be made. Here, the order of integration, I(d) for the explanatory variables must be
known before any conclusion can be drawn (see Pesaran et al., 2001).

The second stage of ARDL approach is to estimate the coefficients of the long run cointegrating
relationship and the corresponding ECM. Since the data are quarterly, we choose four for the
maximum order of the lags in ARDL model. The error correction version of the ARDL (4, 4, 4, 4,
4, 4).

\[
DL\text{Rating}_t - \alpha_0 + \sum_{i=1}^{4} b_i DL\text{Rating}_{t-i} + \sum_{i=1}^{4} c_i DI(Debt/GDP)_{t-i} + \sum_{i=1}^{4} d_i DI(Debt\text{ Export})_{t-i} + \\
\sum_{i=1}^{4} e_i DI(CAB/GDP)_{t-i} + \sum_{i=1}^{4} f_i DI(STD\text{ Resv})_{t-i} + \sum_{i=1}^{4} g_i DI(USTB)_{t-i} + \sum_{i=1}^{4} h_i DI(Debt\text{ serv}\text{ Resv})_{t-i} + \\
\sum_{i=1}^{4} i_j DL(Debt\text{ serv}\text{ Export})_{t-i} + \delta_{1t} LRating_{t-1} + \delta_{2t} L(Debt/GDP)_{t-1} + \delta_{3t} L(Debt\text{ Export})_{t-1} + \\
\delta_{4t} (CAB/GDP)_{t-1} + \delta_{5t} L(STD\text{ Resv})_{t-1} + \delta_{6t} L(USTB)_{t-1} + \delta_{7t} L(Debt\text{ serv}\text{ Resv})_{t-1} + \\
\delta_{8t} L(Debt\text{ serv}\text{ Export})_{t-1} + \epsilon_t
\]

The lagged error correction term (\(e_{t-1}\)) derived from the ECM model is an important element in the
dynamic of cointegrated system as it allows for adjustment back to the long-term equilibrium
relationship given a deviation in the last quarter. The appropriate lag structure of the ECM is
determined by three model selection criteria: Schwarz Bayesian Criteria (SBC), Akaike Information
Criteria (AIC), and Adjusted LR Test.

4.0 ANALYSIS OF RESULTS

Since the selection of the lag length are important in estimating the ARDL regression, the test run
over 4 lag length of 1, 2, 3 and 4 to determine the optimal lag length. However, lag length determine
by SBC and AIC produced contradict results. SBC suggests lag length of 1 while 4 lag lengths are
suggested by AIC. Based on an Adjusted LR Test on Table I, lag length of 1 has been determined.
The log likehood value is 170.99 (Prob.0.86) cannot reject the null hypothesis of no misspecification
at lag length 1. Thus, lag length of 1 is selected to proceed to the next step in this study.

<table>
<thead>
<tr>
<th>Order</th>
<th>AIC</th>
<th>SBC</th>
<th>Adjusted LR Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>270.9389*</td>
<td>15.9379</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>228.6250</td>
<td>35.4425</td>
<td>75.0451[.163]</td>
</tr>
<tr>
<td>2</td>
<td>205.2775</td>
<td>73.9134</td>
<td>136.7021[.283]</td>
</tr>
<tr>
<td>1</td>
<td>220.6977</td>
<td>151.1520*</td>
<td>170.9938[.860]*</td>
</tr>
<tr>
<td>0</td>
<td>-64.7981</td>
<td>-72.5254</td>
<td>417.6967[.000]</td>
</tr>
</tbody>
</table>

AIC = Akaike Information Criterion  SBC = Schwarz Bayesian Criterion
Existence of a long run relationship
We find that the computed F-statistics for Malaysia is 4.4646(0.015) exceed the critical bound (2.365, 3.553) at 5 percent significance level (Table II). This implies that the null hypothesis of no cointegrating long-run relationship can be rejected. These results reveal a long-run relationship between macroeconomic variables and credit ratings in Malaysia. Next, the ECM’s representation for the ARDL model is selected using the SBC. Table III provides the estimates of the ARDL long-run coefficient for the model. Table IV contains the estimates of the corresponding ECM’s.

Cointegrating models and ECM’s
The error correction coefficient estimated at -3.1508 (0.003) is statistically highly significant, has correct sign and suggests a moderate speed of convergence to equilibrium. Result of the estimated long-run relationship shows that Debt to GDP, Debt Service to Reserve and US Treasury Bill rate (3-months) drive credit ratings performance in Malaysia. It appears that Debt to GDP is the strongest mechanism affecting changes in credit ratings performance. The coefficient of Debt to GDP implies, 1% increase in Debt to GDP ratio may downgrades the ratings by 0.61 percent. It followed by the impact of Debt Service to Reserve ratio and US Treasury Bill rate (3-months), which may downgrades the rating by 0.36 percent and 0.12 percent respectively. This finding is consistent with Rowland (2004) who concluded that US Treasury Bill rate might be good indicator to predict sovereign rating movement in Malaysia.

The impact of Debt to GDP (solvency variable), Debt Service to Reserve (liquidity variable) and US Treasury Bill rate (external shocks) is negative and statistically significant to sovereign ratings performance in the long run. For Debt to GDP, which represents the solvency, variable, shows that higher debt may increase the risk of default and as a result this may downgrade the sovereign rating. In addition, the liquidity variable, which is represented by Debt Service to Reserve ratio, found to have a negative impact to the Malaysia’s sovereign ratings. Moreover, higher ratio of the variable may indicate low liquidity hence it may result the downgrade of the sovereign rating. US Treasury Bill rate (3-months) which represents the external shock from the rest of the world, resulted a negative impact to the rating. This shows that any changes to the US Treasury Bill rate may affect the interest rate spread significantly. Consequently, it would give an impact to the level of capital inflows to Malaysia and to a lesser extent, Malaysian economic growth. Indirectly, it may influence the assessment of sovereign rating given by credit rating agency.

TABLE II: F-Statistics for Testing the Existence of Long-Run Relationship

<table>
<thead>
<tr>
<th>Computed F-Statistic</th>
<th>4.4646*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bound Testing Critical Values at 5%</td>
<td>2.365 (lower)</td>
</tr>
<tr>
<td></td>
<td>3.553 (upper)</td>
</tr>
</tbody>
</table>

The critical values are taken from Pesaran et al. (2001), unrestricted intercept and no trend with seven regressors. * denote rejecting the null at 5 percent level. The range of the critical value at 1 percent and 10 percent are 3.027-4.296 and 2.035-3.153 respectively.

TABLE III: Results of Estimated Long-Run Coefficients using the ARDL Approach

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEBTEXP</td>
<td>0.014393</td>
<td>0.32256</td>
<td>0.965</td>
</tr>
<tr>
<td>DEBTGDP</td>
<td>-0.60558</td>
<td>0.27981</td>
<td>0.036*</td>
</tr>
<tr>
<td>CABGDP</td>
<td>-0.0076987</td>
<td>0.0048310</td>
<td>0.118</td>
</tr>
<tr>
<td>STDRESV</td>
<td>0.20956</td>
<td>0.10664</td>
<td>0.056</td>
</tr>
<tr>
<td>SERRESV</td>
<td>-0.35540</td>
<td>0.17327</td>
<td>0.046*</td>
</tr>
<tr>
<td>SEREXP</td>
<td>0.16556</td>
<td>0.22329</td>
<td>0.462</td>
</tr>
<tr>
<td>UST3</td>
<td>-0.11695</td>
<td>0.056270</td>
<td>0.044*</td>
</tr>
<tr>
<td>INPT</td>
<td>2.4441</td>
<td>0.55228</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

Note: * denotes significant at 5% level
**TABLE IV: Results of Error Correction Models**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>∆DEBTEXP</td>
<td>0.44190</td>
<td>0.12830</td>
<td>0.001*</td>
</tr>
<tr>
<td>∆DEBTGDP</td>
<td>-0.18061</td>
<td>0.10772</td>
<td>0.100</td>
</tr>
<tr>
<td>∆CABGDP</td>
<td>-0.0022960</td>
<td>0.0014863</td>
<td>0.129</td>
</tr>
<tr>
<td>∆STDRESV</td>
<td>0.062500</td>
<td>0.045079</td>
<td>0.172</td>
</tr>
<tr>
<td>∆SERRESV</td>
<td>0.15391</td>
<td>0.072166</td>
<td>0.038*</td>
</tr>
<tr>
<td>∆SEREXP</td>
<td>-0.17474</td>
<td>0.078446</td>
<td>0.031*</td>
</tr>
<tr>
<td>∆UST3</td>
<td>-0.034878</td>
<td>0.015616</td>
<td>0.030*</td>
</tr>
<tr>
<td>∆INPT</td>
<td>0.72892</td>
<td>0.33917</td>
<td>0.037*</td>
</tr>
<tr>
<td>Ecm(-1)</td>
<td>-0.29824</td>
<td>0.094653</td>
<td>0.003*</td>
</tr>
</tbody>
</table>

Note: * denotes significant at 5% level

**5.0 CONCLUSIONS AND POLICY IMPLICATION**

Sovereign credit rating which is referring to one’s ability to meet debt obligation has been used by investors to decide on buying a bond or approve a loan. Countries with high rated are easily to get fund for investment activities that can boost the economics growth. This paper investigates the long run relationship of sovereign credit rating with the macroeconomic variables over the sample period from 1991 to 2004. The results of bounds test (Pesaran et al., 2001) reveal that Debt to GDP, Debt Service to Reserve and US Treasury Bill rate (3-months) and sovereign rating are cointegrated in the long run.

From the above findings, two policy implications can be derived. First, since Debt to GDP is one of the important indicators denote by credit rating agency to make a judgment on the rating, policy makers need to give extensive information regarding on the structure of the debt rather than giving an overall number of outstanding debts. Higher outstanding debt sometimes does not indicate “unhealthy” condition of the economy; it sometimes supported by a profitable investment activities that country might gain in the future. Therefore, it is suggested that information on the debt should be explained in details; for example by maturity of the debt (i.e. long term or short term debt), by sector (i.e. public, banks and private) and by instruments (i.e. trade credits and bonds). This is useful to avoid misinterpretation by the credit rating agency.

In addition, interest rate spread between Malaysia and US should be considered as one of the important elements. A widen spread may affect our country’s savings level as investors are attracted to US financial market. It has been noted that in Keynesian economics theory, saving is equal investment. Any declining in saving rate may lower the level of investment as well as it contribution to GDP. Therefore, any movement in US Treasury Bill rate should be immediately response by the central bank.

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