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An Assessment of Malaysia's Fiscal Deficit and Current Account Balance Using A Nonlinear Approach

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ABSTRACT

Amidst the COVID-19 crisis, the Malaysian government responded decisively, implementing substantial fiscal expansion measures to combat the pandemic's spread and safeguard the economy. In the second quarter of 2020, the current account surplus decreased to RM5.6 billion, or 1.7% of GDP, raising concerns of a twin-deficit. Keynesians relate fiscal deficits to the twin-deficit hypothesis. This study will use data from 2008Q1 to 2022Q4 to investigate the validity of the theory on Malaysia in the aftermath of the COVID-19 pandemic. For empirical analysis, the Nonlinear Autoregressive Distributed Lag (NARDL) approach will be used. Results show that fiscal deficits have neither short- or long-run effect on the current account, confirming the Ricardian Equivalence Hypothesis (REH), which holds that fiscal deficits do not affect the current account balance. In addition, research findings confirm the significance of economic growth and exchange rates in augmenting the surplus of the current account. Therefore, it is crucial to prioritise the successful execution of the National Investment Master Plan 2030, the Twelfth Malaysia Plan, and the New Industrial Master Plan 2030 in order to effectively address the prevailing economic challenges. These efforts have the potential to boost economic revitalization and foster long-term growth.

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INTRODUCTION

Nevertheless, in 2023, Malaysia's economy has encountered notable challenges, with an apparent slowdown in growth to 3.7% from the impressive 8.7% achieved in 2022 (DOSM, 2024). The recent slowdown in economic growth has coincided with a decrease in the surplus of the current account. Interestingly, the fourth quarter witnessed a relatively modest surplus of RM253.4 million, marking the lowest figure since the country encountered a current account deficit in 1997. In addition, there has been a clear decrease in goods exports, a substantial decline in foreign direct investment (FDI), a devaluation of the exchange rate against the US dollar, and an increasing fiscal deficit. Based on these indicators, it appears that the economic outlook is not very promising. Given the current circumstances, it is imperative to assess whether Malaysia's current account balance will once again lead to a twin deficit hypothesis (TDH) scenario due to a persistent and escalating fiscal deficit.

When examining the connection between the current account balance (CAB) and the fiscal deficit, three hypotheses are relevant. Every theory offers a unique perspective. According to Keynesian theories, increasing fiscal deficits would worsen the CAB by boosting demand for imports and domestic spending (Mohanty and Sethi, 2019; Afonso et al., 2022; and Handoyo et al., 2020). In contrast, the Twin Divergence Hypothesis suggests that the CAB will improve due to fiscal deficits (Javid et al., 2010; Abbas et al., 2011; Shah, 2022). Conversely, the Ricardian Equivalence Hypothesis (REH) argues that a rise in the fiscal deficit has no impact on the CAB (Sakyi et al., 2016; Mumtaz and Munir, 2016 ; Marzouk and Oukhallou, 2017).

From this perspective, it is imperative to thoroughly understand the factors that influence the current account, with particular emphasis on the fiscal deficit, exchange rate, and gross national income per capita. This article employs a nonlinear asymmetric approach to analyse the impact of the fiscal deficit on Malaysia's CAB before and after the Covid-19 crisis. By utilizing the most recent data, we can determine whether Malaysia continues to adhere to the Keynesian or REH, or if it aligns with the twin divergence hypothesis. Until now, no empirical study has examined the impact of the fiscal deficit on the current account in Malaysia using the NARDL model.

BRIEF OVERVIEW OF MALAYSIA'S CAB AND FISCAL DEFICITS

Narrowing Current Account Surplus

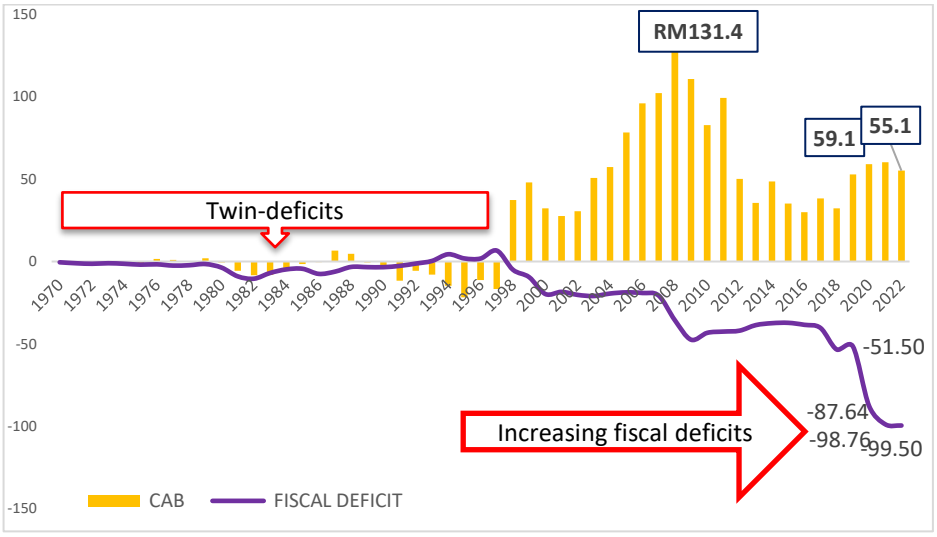
In the 1970s, the Malaysian economy was primarily cantered on commodities and agricultural sectors. The implementation of the Fourth Malaysia Plan (1981-1986) and subsequent Industrial Master Plans during the early 1980s represented pivotal initiatives that catalysed the process of industrialization. This transition unfolded in two discernible phases: Export-Oriented Industrialization (EOI) in the early 1970s and Import-Substituting Industrialization (ISI) in the early 1980s (Asid, 2010). Nevertheless, the 1980s were characterized by a significant downturn in commodity prices, coinciding with intensified industrialization, which exacerbated the current account deficit (Figure 1).

Between 1990 and 1997, Malaysia grappled with a notable current account deficit, reaching its peak in 1995 at RM21.6 billion, equivalent to 10.2% of the Gross National Income (GNI). This deficit was primarily attributed to escalated imports of intermediate goods, notably for the electrical and electronics (E&E) industries, which heavily relied on imported raw materials sourced from Taiwan, Japan, and the United States (MOF, 1996). Additionally, extensive infrastructure ventures undertaken in Malaysia during the 1990s (Baharumshah et al., 2003) necessitated a significant inflow of imported capital.

However, from 2000 to 2009, Malaysia experienced a substantial surplus in net exports, contributing to a bolstering of the current account. Throughout this period, there was an average increase of 4.0% in the export of goods, while the growth rate of imports lagged slightly at 3.4%. Notably, in 2008, Malaysia achieved its highest-ever current account surplus of RM131.4 billion, constituting 17.6% of the country's GNI. The surge in exports was predominantly attributed to burgeoning commodity prices and the export of manufactured goods derived from commodities, which accounted for 23.5% of total exports in 2008, marking a significant upsurge from 13.3% in 2000 (BNM, 2011).

During the period spanning 2010 to 2019, there was a discernible downturn in the current account surplus, reaching its lowest ebb in 2016 at RM29.9 billion (Figure 1), constituting 2.5% of the GNI. This reduction in surplus coincided with a deceleration in economic growth, standing at 4.2%. The intricate global economic landscape, marked by uncertainties in China's economic trajectory, yuan depreciation, and economic contractions in various oil-producing nations, collectively contributed to this downturn (Dutt, 2016).

The year 2020 presented unparalleled economic and health challenges worldwide. As a proactive response to the Covid-19 pandemic, widespread lockdowns and border restrictions were enforced, exerting significant ramifications on Malaysia's economic landscape. Notably, the nation's GDP witnessed a contraction of 5.5%, accompanied by declines in both exports (1.1%) and imports (5.8%). Particularly noteworthy was the substantial downturn in imports of capital goods (negative 9.8%) and intermediate products (negative 8.1%). Nonetheless, amidst these adversities, the current account surplus surged to RM59.1 billion, equivalent to 4.3% of GNI (DOSM, 2024). This resurgence was primarily due to a significant decrease in imports compared to exports, resulting in a heightened surplus, as depicted in Figure 1.



Source: Department of Statistics Malaysia

Figure 1 Malaysian Current Account Balance and Fiscal Deficit in RM Billions, from 1970 to 2022

Growing Fiscal Deficit

The fiscal balance in Malaysia has been in deficit since the 1970s, as illustrated in Figure 1. Following the commodity crisis in the early 1980s, the fiscal deficit in Malaysia widened, prompting the government to escalate spending to stimulate the economy during the crisis period. Subsequently, in the late 1980s and early 1990s, Malaysia witnessed robust economic growth, predominantly propelled by the rapid expansion of the manufacturing sector (Hashemi-nabi et al., 2021). This contributed to a reduction in the country's fiscal deficit, eventually leading to a fiscal surplus from 1993 to 1997, as depicted in Figure 1.

In response to the Asian Financial Crisis of 1997-1998, Malaysia implemented stimulus packages to mitigate the crisis, resulting in a higher fiscal deficit. Similar measures were also undertaken during the Global Financial Crisis 2008-2009 (Ahmad Bhari et al., 2020). These measures, aimed at navigating severe economic downturns, resulted in an increase in the country's fiscal deficits. It is worth noting that Malaysian authorities have consistently utilized discretionary fiscal policies during periods of economic slowdown, including strategies such as expanding government spending, making capital investments, and reducing taxes.

The Asian Financial Crisis of 1997-1998 had a profound effect on Malaysia's history, leading to persistent fiscal deficits that persist to this day. Malaysia saw a significant rise in its fiscal deficits in 2021 and 2022 as a result of the impact of Covid-19. In 2021, the deficit amounted to RM98.8 billion, which accounted for 6.2% of the country's GDP. In 2022, the deficit reached RM99.5 billion, accounting for 5.5% of the GDP (EPU, 2023). Given the current circumstances surrounding Covid-19, the government took action by implementing fiscal policies aimed at boosting economic recovery. These measures were implemented to offer essential assistance to businesses and people in order to tackle the economic repercussions.

Figure 1.1 presents a comprehensive overview of the historical trend showcasing the correlation between Malaysia's fiscal deficit and CAB from 1970 to 2022. Prior to 1998, a clear pattern of interaction between the two variables is evident. However, post-1998, there is a noticeable divergence in their trajectories, with the gap between them steadily widening over time. This divergence signals a significant alteration in the relationship dynamics. As a result, the primary objective of this study is to meticulously investigate the complex interplay between Malaysia's fiscal deficit and CAB, utilizing the analytical framework proposed by Mallick et al. (2021).

THEORETICAL FRAMEWORK

Various theories in economic literature explore the relationships of fiscal deficits on CAB.

The Keynesian Theory

The Keynesian perspective delineates two pathways leading to the Twin Deficit Hypothesis (TDH). Firstly, based on the Mundell-Fleming model (Mundell 1968; Fleming 1962), it asserts that pursuing expansionary fiscal policies involving increased government spending and reduced taxes can lead to long-term consequences. These policies can drive up interest rates, attracting capital inflows and strengthening the exchange rate. Consequently, this appreciation makes exports relatively more expensive while imports become cheaper, resulting in a decline in net exports and an increase in the current account deficit.

The second approach, the Keynesian absorption model, posits that a fiscal deficit will lead to an increase in economic absorption. Consequently, this phenomenon stimulates an increase in domestic spending and imports, leading to a decline in the trade balance (Mallick et al., 2021; Bilman and Karaoğlan, 2020; Ratha, 2012). In the long run, the increasing consumption will cause domestic interest rates to rise, which will cause the local currency to appreciate and add to trade deficits.

Ricardian Theory

The REH was first introduced by Barro in 1974, and the expanded version by Barro (1989) suggests that fiscal and CAD are not always linked. According to REH, financing fiscal deficits through government borrowing does not significantly impact the CAB, as individuals adjust their saving and consumption behaviour in anticipation of future tax obligations. REH argues that people who think forward and rationally understand that increased national debt today will ultimately lead to higher taxes in the future. Consequently, individuals may save more or reduce consumption to offset the tax burden, thereby reducing the impact of fiscal deficits on the current account (Mallick et al., 2021; Abbas et al., 2011). Since government spending is fuelled by debt, economic agents may assume that, the government will need to increase taxes to offset its spending. This reduces ongoing expenses while increasing precautionary savings so economic agents can maintain their long-term consumption rate.

EMPIRICAL REVIEW

Several empirical investigations have delved into the nexus between fiscal deficits and the CAB. However, the divergent outcomes yielded by these studies have contributed to the absence of consensus within the pertinent literature. Consequently, extant research can be categorized into three primary subgroups: the Keynesian TDH, the REH, and the twin divergence hypothesis.

Banday and Aneja (2021) conducted a study scrutinizing the TDH and REH principles utilizing South Africa as a case study. Employing ARDL bounds and Granger causality tests for data analysis, their findings unveiled a long-term association between the fiscal deficit and the CAD, thus aligning with the Keynesian perspective while challenging the REH. Moreover, their study underscored the potential contribution of other macroeconomic imbalances to the CAD. Similarly, Banday and Aneja (2018) conducted a parallel investigation focusing on India spanning from 1990 to 2015, employing the Vector Error Correction Model (VECM) and Granger causality techniques. Their research corroborated the validity of the Keynesian theorem

within the Indian context. Furthermore, they observed the influence of macroeconomic variables such as inflation, exchange rates, interest rates, and monetary instability on the direction of the CAD.

Mallick et al. (2021) employed the NARDL model to investigate the nonlinear asymmetric relationship between fiscal deficits and CAD in India. Their analysis encompassed data from 1998Q2 to 2017Q4. The findings of their study revealed the presence of short- and long-term asymmetry in both fiscal deficits and CAD, thus corroborating the TDH. Moreover, the results indicated that fiscal deficits exert an influence on exchange rates and financial markets. Similarly, Handoyo et al. (2020) conducted research on Indonesia utilizing the Autoregressive Distributed Lag (ARDL) method and unearthed a significant relationship between budget deficits and CAD. In a parallel vein, Uz (2010) adopted a similar methodology and identified evidence supporting the TDH in Turkey spanning from 1987Q1 to 2008Q2.

In a study by Rajakaruna and Suardi (2021), TDH in five South Asian countries: Sri Lanka, India, Maldives, Pakistan, and Bhutan. Data from 1980 to 2017 were used for the study. The panel Granger causality test supported the TDH in these countries. However, the study also highlighted that fiscal deficit is not the only determining factor for CAD. A similar study by Anoruo and Ramchander (1998) used the Granger causality test for Southeast Asian economies, including India, Indonesia, Korea, Malaysia, and the Philippines. Their results suggest that a trade deficit causes a fiscal deficit, except for Malaysia, where a bi-directional relationship was observed.

Baharumshah et al. (2006) conducted an assessment of the TDH theory across four ASEAN-4 countries: Indonesia, Malaysia, the Philippines, and Thailand. Utilizing a Vector Autoregressive (VAR) model and employing the Granger causality test, their study sought to elucidate the relationship between fiscal deficits and CADs. The findings of their investigation unveiled distinctive patterns among the examined countries. Specifically, Thailand conformed to Keynesian economic theory, implying a unidirectional causal relationship from fiscal deficits to CADs. Conversely, Malaysia and the Philippines exhibited bi-directional effects, indicative of a reciprocal association between the two deficits. Intriguingly, Indonesia demonstrated contrasting results, with its CAD contributing to the fiscal deficit, suggesting a unique dynamic compared to the other ASEAN-4 nations.

Some scholars have also studied fiscal deficits, CAD, and exchange rate policy. Mehta and Mallikarjun (2023) conducted a study using an ARDL model to examine fiscal policy, CAD, exchange rate, and trade openness in India from 1978 to 2021. The results supported TDH; in the long run, CAD is significantly influenced by changes in fiscal deficits, exchange rates, and trade openness. Using the generalised method of moments (GMM) approach, Abbassi et al. (2015) demonstrated the existence of TDH in Iran between 1981 and 2012. Currency appreciation tightens the CAD and is consistent with the Marshall-Lerner condition.

In the field of research on the relationship between fiscal deficits and CAD, there is a category of studies that do not find a significant impact of fiscal deficit on CAB. For example, Nickel and Vansteenkiste (2008) conducted a study on REH, that examined fiscal policies and current account balances in 22 developed countries. The analysis used a dynamic panel threshold model and found that an increase in the fiscal deficit led to an increase in the CAD when the debt ratio was below 90%. However, Ricardian behaviour was observed in countries where the debt ratio exceeded 90% of GDP, suggesting that the fiscal deficit has no impact on the CAD.

Similarly, Badaik and Panda (2020) empirically examined the TDH theory in India using VAR and ARDL models for the period 1970 to 2012. Their results indicated no significant relationship between fiscal deficit and the CAD in India, and thus support REH. Basu and Datta (2005) examined TDH in India using the Granger causality test and found evidence supporting the validity of REH in the Indian context. Mohammadi and Moshrefi (2012) studied REH in South Korea, Malaysia, Singapore, and Thailand between 1975 and 2008 using the VECM method. According to the findings, the REH is valid in these countries. The ARDL test was used by Mumtaz and Munir (2016) to examine the relationship between fiscal deficits and CAD in South Asian countries, including Bangladesh, India, Pakistan, and Sri Lanka. REH has been observed in India and Pakistan, but not in Bangladesh or Sri Lanka.

Meanwhile, in a study focused on Pakistan, Javid et al. (2010), using the VAR technique, found that an expansionary fiscal shock improved the current account, supporting the twin divergence hypothesis. Sakyi et al. (2016) confirmed the existence of the twin divergence hypothesis for Ghana and Nigeria using the ARDL method.

Drawing from previous research outcomes, fiscal deficits have been implicated in the exacerbation of CAD or the reduction of current account surpluses. Numerous analyses have furnished evidence in support of the Keynesian TDH, although a some of the studies have lent credence to the REH and twin divergence hypotheses. The extant literature pertaining to Malaysia has yielded mixed results, with both Keynesian and Ricardian theories gaining traction. Additionally, it is noteworthy that the majority of analyses focusing on Malaysia have relied on time series data predating the onset of the Covid-19 pandemic. Consequently, this study marks the inaugural endeavour within the Malaysian context to employ the NARDL approach to investigate the relationship between Malaysian fiscal deficits and the CAB, thus presenting a significant contribution to the existing body of literature.

DATA AND METHODOLOGY

This article re-examines the empirical validity of both Keynesian and REH theories on time series data using the asymmetric approach to Malaysia's fiscal deficit and the CAB. Following previous empirical literature (Shah et al., 2020; Banday, 2020; Mallick et al., 2021; Mehta et al., 2023), we specify the mathematical model function as:

$$\text{CAB} = \text{f}(F\text{D}, \text{GNP}, \text{REER}) \tag{1}$$

where CAB denotes as current account balance, FD for the fiscal deficit, GNP for the gross national income per capita, and REER for the real effective exchange rate. The dependent variable under consideration is the CAB, while the remaining variables serve as independent variables. Data pertaining to CAB and GNP are sourced from the Department of Statistics Malaysia (DOSM), while data regarding the fiscal deficit are obtained from the Ministry of Finance (MOF). The data for the real effective exchange rate (REER) is extracted from Bruegel's database. This dataset includes a wide range of 177 countries, which is worth mentioning. For a comprehensive understanding of the construction and comparative analysis of these REERs, interested readers are directed to consult (Darvas, 2021). Furthermore, all variables are logarithmically transformed and measured in US dollars.

The econometric equation of the model is given as follows:

$$\ln \text{CAB}_\text{t} = \beta_0 + \beta_1 \mathit{LFD} + \beta_2 \text{LGNP} + \beta_3 \mathit{LREER} + \varepsilon_\text{t} \tag{2}$$

where t = 1, 2, …, t refers to the period, and ε_t represents the error term and

To ensure the reliability of our conclusions concerning the integration of variables, this study employs unit root tests that accommodate structural breaks. Such tests are crucial for discerning whether variables demonstrate stationarity at level I(0), first difference I(1), or a blend of stationary and non-stationary attributes. Subsequently, the study utilizes the NARDL approach proposed by Shin et al. (2014) to investigate the asymmetrical relationship between Malaysia's fiscal deficit and CAB across both short and long-term horizons.

In line with previous studies such as Mallick et al. (2021) and Adebowale (2021), the following equations present the NARDL model, which incorporates the asymmetric framework with equation (3):

$$\begin{gathered}\Delta\text{LCAB}_\text{t} = \beta_0 + \lambda_1\text{LCAB}_{\text{t-i}} + \lambda_2\text{LFD}^{+}_{\text{t-i}} + \lambda_2\text{LFD}^{-}_{\text{t-i}} + \lambda_3\text{LGNP}^{+}_{\text{t-i}} + \lambda_3\text{LGNP}^{-}_{\text{t-i}} + \lambda_4\text{LREER}^{+}_{\text{t-i}} + \\ \lambda_4\text{LREER}^{-}_{\text{t-i}} + \Sigma^{\text{p}}_{\text{i=1}}\beta_1\Delta\text{LCAB}_{\text{t-i}} + \Sigma^{\text{p}}_{\text{i=1}}\beta_2\Delta\text{LFD}^{+}_{\text{t-i}} + \Sigma^{\text{p}}_{\text{i=1}}\beta_2\Delta\text{LFD}^{-}_{\text{t-i}} + \beta_3\Delta\text{LGNP}^{+}_{\text{t-i}} + \beta_3\Delta\text{LGNP}^{-}_{\text{t-i}} + \\ \Sigma^{\text{p}}_{\text{i=1}}\beta_4\Delta\text{LREER}^{+}_{\text{t-i}} + \Sigma^{\text{p}}_{\text{i=1}}\beta_4\Delta\text{LREER}^{-}_{\text{t-i}} + D_t + \varepsilon_\text{t}\end{gathered} \tag{3}$$

Where LCAB, LFD, LGNP and LREER and D_t represents the CAB, fiscal deficit, gross national income per capita, real effective exchange rate and the dummy variable for the structural break, respectively. The short run and long run coefficients are denoted by β_i and λ_i, respectively. The white noise error term is represented by ε_t. The Equation (3) uses the minus (−) and plus (+) subscripts to represent negative and positive disturbances. Additionally, a dummy variable for the structural break has been included in the study, which is verified using the Zivot and Andrews (1992) method.

The NARDL approach analyses the potential nonlinear impact of independent variables on the dependent variable by breaking them down into positive and negative changes (Chowdhury et al., 2020). This

can be achieved by utilizing the methodology proposed by Shin et al. (2014) to decompose the variables for FD, GNP, and REER into partial sums of positive and negative changes, as denoted by Equation (4).

$$\begin{aligned} LFD_t^+ &= \Sigma_{i=1}^t \Delta LFD_i^+ = \Sigma_{i=1}^t \max(\Delta LFD_i, 0) \\ LFD_t^- &= \Sigma_{i=1}^t \Delta LFD_i^- = \Sigma_{i=1}^t \min(\Delta LFD_i, 0) \\ LGNP_t^+ &= \Sigma_{i=1}^t \Delta LGNP_i^+ = \Sigma_{i=1}^t \max(\Delta LGNP_i, 0) \\ LGNP_t^- &= \Sigma_{i=1}^t \Delta LGNP_i^- = \Sigma_{i=1}^t \min(\Delta LGNP_i, 0) \\ LREER_t^+ &= \Sigma_{i=1}^t \Delta LREER_i^+ = \Sigma_{i=1}^t \max(\Delta LREER_i, 0) \\ LREER_t^- &= \Sigma_{i=1}^t \Delta LREER_i^- = \Sigma_{i=1}^t \min(\Delta LREER_i, 0) \end{aligned} \quad (4)$$

The bound test, introduced by Shin et al. (2014), is used in the NARDL approach to identify asymmetrical cointegration in the long run. The null hypothesis states that the effect is symmetrical in the long-run H_0: $\lambda_1^+ = \lambda_1^- = \lambda_2^+ = \lambda_2^- = \lambda_3^+ = \lambda_3^- = \lambda_4^+ = \lambda_4^- = 0$. On the contrary, the alternative hypothesis states the effect is asymmetrical in the long run H_1: $\lambda_1^+ \neq \lambda_1^- \neq \lambda_2^+ \neq \lambda_2^- \neq \lambda_3^+ \neq \lambda_3^- \neq \lambda_4^+ \neq \lambda_4^- \neq 0$. The F-statistic and critical values are crucial in determining whether to accept or reject the null hypothesis (H0). Rejecting the null hypothesis suggests the presence of an asymmetrical effect (Truong and Van Vo, 2022; and Sheikh et al., 2020).

Zivot and Andrews Test

Based on the results obtained from the Unit Root test, it is determined that LCAB and LFD are stationary at the base level. This indicates that they do not exhibit a unit root and do not require differencing to attain stationarity. Conversely, the variables LGNP and LREER are identified to be stationary at the first level difference. These findings imply that the NARDL method can be applied to these variables. This study primarily focuses on accommodating structural breaks and adopts the methodologies proposed by Zivot and Andrews (1992), as discussed in previous literature by Sheikh et al. (2020) and Yildirim and Vicil (2022).

The outcomes of these tests, detailed in Table 1, were utilized to ascertain the occurrence of significant structural shifts during the specified timeframe. Consequently, the investigation concluded that a noteworthy structural break did manifest within the designated period.

In the second quarter of 2017 (as delineated in Table 1), a marked structural break occurred in the CAB. Notably, the CAB surplus witnessed a substantial upsurge, ascending to RM10.2 billion from RM5.1 billion in the preceding quarter. This sudden escalation can primarily be attributed to a significant 2.4% reduction in goods imports, coupled with a notable increase in services exports, both of which played pivotal roles in augmenting the remarkable surplus.

The detected structural break in GNP in the first quarter of 2015 can be attributed to the devaluation of the Malaysian ringgit against the US dollar, specifically by 9.7%. While GNP, measured in Ringgit Malaysia, exhibited a 6.3% increase, its conversion into US dollars indicated a corresponding decline of 6.1%. Regarding the FD, a structural break materialized in the first quarter of 2020, prompted by government interventions aimed at mitigating the ramifications of the Covid-19 pandemic. In terms of the REER, a structural break was observed in the third quarter of 2015, precipitated by a significant currency depreciation of 19.2%. Subsequent to confirming the presence of structural breaks, this study incorporated a dummy variable based on the earliest identified structural break. Consequently, the estimation of coefficients for the NARDL model adhered to this methodology.

Table 1 Zivot & Andrews unit root test

	LCAB	LFD	LGNP	LREER
		Both Trend and Intercept		
Break Date	2017Q2	2020Q1	2015Q1	2015Q3
t-Statistics	-5.39***	-9.32***	-3.9***	-4.51***
Critical Value	0.07	0.00	0.00	0.00
1%	-5.57	-5.57	-5.57	-5.57
5%	-5.08	-5.08	-5.08	-5.08
10%	-4.82	-4.82	-4.82	-4.82

Note: The asterisks (***), (**) and (*) indicate significant at 1%, 5% and 10% respectively.

Source: Author calculations

Lag Selection Criteria

The lag length selection criteria results are presented in Table 2, which also shows the requirements for the AIC and HQ. Based on the analysis using the AIC, it can conclude that lag one is the optimal lag for this specific model.

Table 2 The optimal number of lags results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	44.50896	NA	1.76e-07	-1.362378	-1.184754	-1.293190
1	217.1916	309.6379*	1.09e-09*	-6.454884*	-5.389137*	-6.039754*
2	230.4093	21.42174	1.66e-09	-6.048596	-4.094728	-5.287525

Source: Author calculations

Non-Linear Autoregressive Distributed Lags (NARDL) Tests

The study utilized the NARDL bounds test to explore asymmetric dynamics in the relationships between the variables. Table 3 reports the F-statistic from the NARDL model, with a value of 6.041, which surpasses both the upper bound critical value of 3.210 and the lower bound critical value of 2.170. This outcome confirms the existence of cointegration, implying that the variables share a long-run equilibrium relationship despite any short-term deviations.

Table 3 NARDL bounds test

Model Specification	F-Statistics	Lower Bound	Upper Bound	Conclusion
Nonlinear	6.041	2.170	3.210	Cointegration

Note: The critical values are selected from 5% significance level.

Source: Author calculations

The long-run coefficients derived from the NARDL model, as presented in Table 4, offer valuable insights into the relationship between the variables under examination. These results signify the existence of a sustainable long-run relationship while discounting the likelihood of a short-run relationship between the variables. Furthermore, the data showcased in Table 4 distinctly indicate that the fiscal deficit does not exert a significant impact on the CAB. Such findings are consistent with the REH theory, which postulates that variations in the fiscal deficit have negligible effects on Malaysia's CAB.

It is important to recognise that the results outlined in this study differ from the commonly accepted views found in most existing research. The prevailing body of research, as supported by the works of Baharumshah et al. (2006); Uz (2010); Mehta and M. Mallikarjun (2023); Afonso et al. (2022); Janko (2020) and Mallick et al. (2021), has hitherto posited a correlation between fiscal deficits and the erosion of surpluses in the current account or the emergence of deficits.

Table 4 Long-run and short-run NARDL test

Variable	Coefficient	t-statistics	Prob.
Long-run estimates			
Constant	7.107	6.455	0.000
LFD_POS	-0.310	-1.147	0.257
LFD_NEG	0.092	0.343	0.733
LGNP_POS	5.103	3.199***	0.002
LGNP_NEG	3.170	2.175***	0.035
LREER_POS	-15.686	-4.035***	0.000
LREER_NEG	-11.864	-3.066***	0.003
Short-run estimates			
ECM(-1)	-0.791	-7.953***	0.000
R-Squared	0.530		
Adjusted R-Squared	0.521		
Durbin Watson	1.919		

Note: The asterisks (***), (**) and (*) indicate significant at 1%, 5% and 10% respectively.

Source: Author calculations

Moreover, the aforementioned findings also prompt concerns regarding the credibility of the TDH in the specific context of Malaysia. Conversely, the findings offer validation for the REH within the Malaysian context. The findings are in line with studies conducted by Badaik and Panda (2020); Mumtaz and Munir (2016); Nkalu et al. (2016); and Marzouk and Oukhallou (2017).

The research conducted by Nickel and Vansteenkiste (2008) suggests that an augmentation in a country's fiscal deficit may not invariably lead to a concomitant decline in its CAB, particularly when the nation harbours a high level of debt. According to their findings, households residing in countries characterized by elevated levels of debt tend to adopt a Ricardian approach. This approach entails curtailing current expenditure in anticipation of potential tax hikes in the future owing to larger fiscal deficits. Furthermore, it is worth mentioning that Malaysia has experienced substantial gains in goods exports over the years, as highlighted by Puah et al. (2006). Increases in goods exports can help mitigate the impact of fiscal deficits on the current account balance.

Table 4 elucidates the asymmetric effects of GNP on CAB over the long term. Specifically, a 1% growth in the economy corresponds to a 5.103% increase in CAB, whereas a 1% decline in the economy yields a 3.170% reduction in CAB. Notably, the impact of positive GNP is more pronounced than that of negative GNP. This contradicts the Keynesian theory, which suggests that implementing expansionary fiscal policies to stimulate the economy will negatively affect CAB (Yurdakul and Ucar, 2015; Hussain et al., 2023; Ratha, 2012; Eita et al., 2019; and Urom and Yuni, 2018). However, this conclusion supports the findings of Kurniadi and Aimon (2018) and Brissimis et al. (2012).

The positive estimated GNP coefficient suggests that the current account will benefit from economic growth. Malaysia, with its strong manufacturing sector and open economy, consistently experiences economic growth that contributes to the expansion of the manufacturing sector. This, in turn, leads to increased exports and a stronger CAB for the nation. Anoruo and Ramchander (1998) discovered that economies that implement proactive export strategies have a higher likelihood of improving their CAB.

Meanwhile, the empirical results from Table 4 demonstrate that the long-term positive component of the REER has a detrimental effect on the CAB. More precisely, a 1% increase in the REER corresponds to a 15.686% decrease in Malaysia's CAB. This indicates that any increase or appreciation in the exchange rate would negatively impact the country's CAB. Conversely, the negative components of the REER have a positive effect on the CAB, as a 1% decline in the exchange rate leads to an 11.684% increase in Malaysia's CAB.

The findings of this study align with previous research that demonstrates a negative connection between REER and CAB. This is supported by the studies conducted by Mehta and Mallikarjun (2023) and Javid et al. (2010), which affirm the validity of the Marshall-Lerner and Mundell-Fleming model conditions. However, these results contradict the study conducted by Duasa (2007), which argues that the Marshall-Lerner theory does not hold true for Malaysia in the long run. Nonetheless, this study did not find any evidence of short-term asymmetric effects between REER and CAB.

Diagnostic and stability tests

The diagnostic test results are summarized in Table 5 According to the results of the Breusch-Godfrey test, there is no indication of serial correlation between the residuals. This finding increases confidence in the validity of the research and confirms the strength and dependability of the model. Additionally, the analysis of heteroscedasticity shows that changes in the distribution of the residuals do not impact the accuracy of the model. Therefore, the credibility of the model is further enhanced. It is found that the diagnostic tests are adequate in explaining the nonlinear model.

Table 5 Diagnostic test

	F-Statistics	Prob.
Breusch-Godfrey Serial Correlation LM	0.201	0.656
Heteroskedasticity test: Breusch-Pagan Godfrey	1.144	0.352

Source: Author calculations

The stability and robustness of the parameters within the NARDL model are rigorously assessed utilizing the CUSUM and CUSUM SQUARES tests. This scrutiny of parameter stability and strength holds paramount significance. The outcomes of these tests, as depicted by the blue lines in Figure 2, consistently fall within the critical region. Therefore, it can be concluded that the parameters of the NARDL model demonstrate stability.

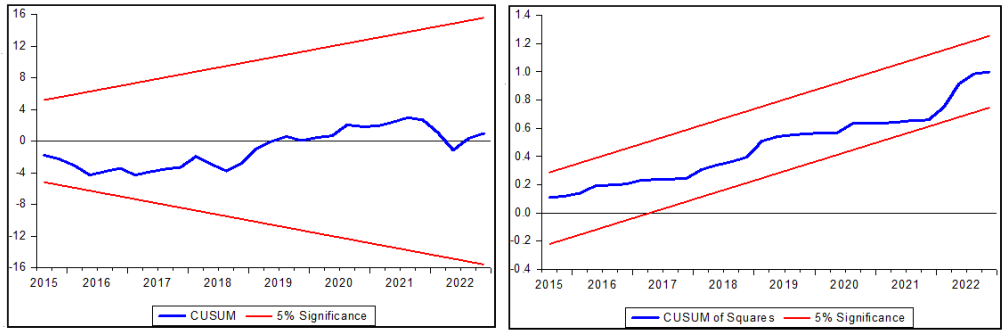
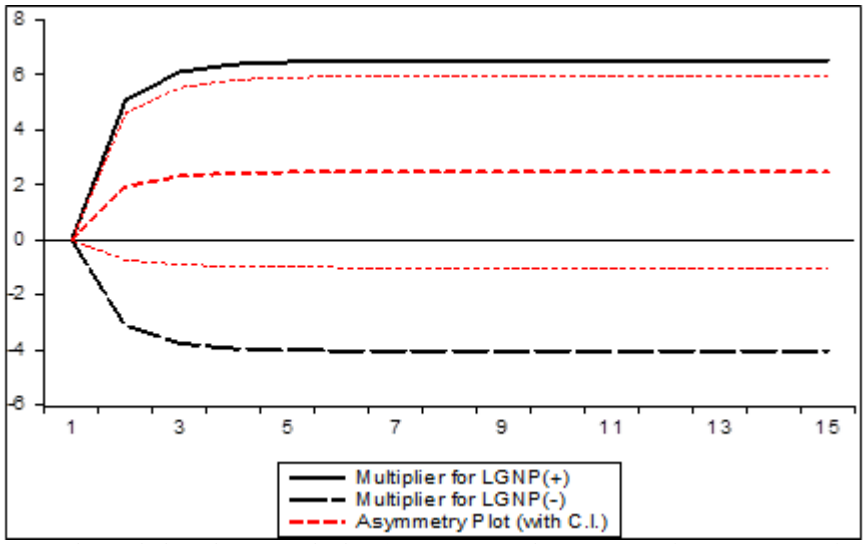


Figure 2 CUSUM and CUSUM SQUARE test

Dynamic Multiplier Graphs

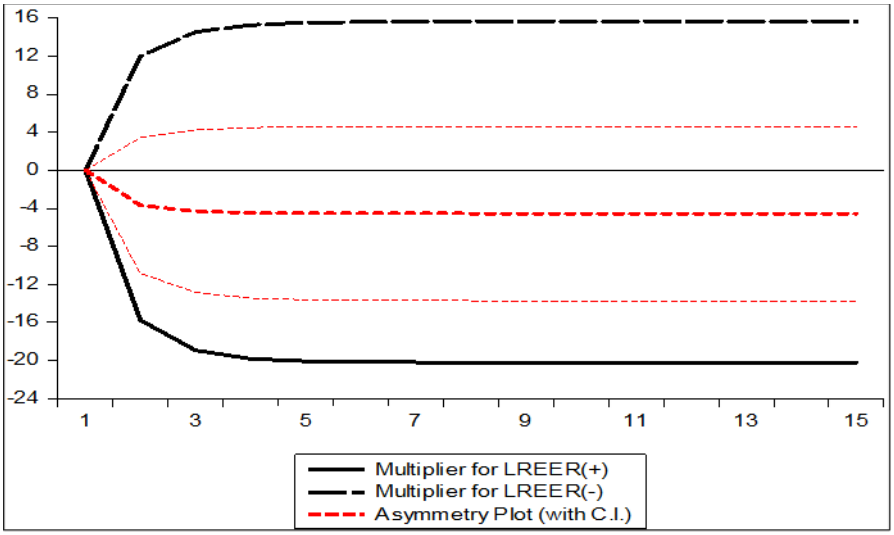
The dynamic multiplier graphs illustrate the response of the CAB to changes in the independent variables of FD, GNP, and REER, regardless of their direction. These figures depict the reaction of each industry to these shocks. Based on the findings presented in Figure 3, we can infer that a 1% increase in GNP leads to a long-term growth in the CAB of more than 5%, which eventually stabilizes at around 6% in the long run. Conversely, a 1% decrease in GNP results in a decrease in CAB of slightly less than 4%, with the percentage approaching 4% over an extended period. The overall outcomes from the dynamic multiplier plot indicate that positive shocks to GNP exert a stronger influence on the CAB over a longer duration, compared to negative shocks.



Notes: The graph shows how a 1% shock to (LGNP_POS) and (LGNP_NEG) impact CAB over time

Figure 3 Dynamic Multiplier of the response of the CAB to GNP

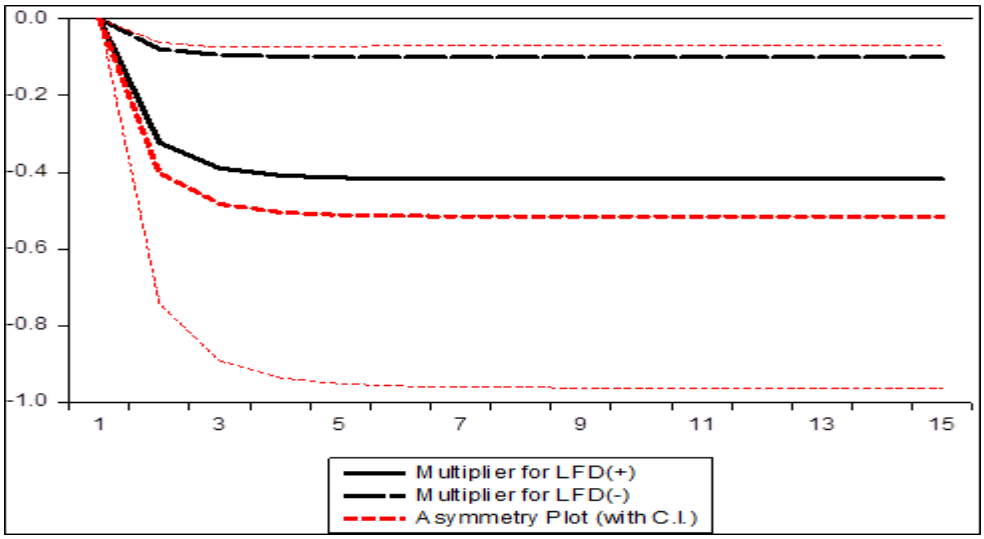
The response of the CAB to positive shocks in the REER is negative, while its response to negative shocks is positive, as shown in Figure 4. The solid black line in the dynamic multiplier charts indicates that a 1% increase in the REER leads to a subsequent decrease of approximately 16% in the long-term CAB, eventually stabilizing at around 20%. Similarly, a 1% decrease in the REER results in an increase in the CAB of over 11%, approaching 16% in the long run. Overall, the dynamic multiplier plot shows that shocks that lead to an appreciation of the REER have a greater long-term impact on the CAB compared to shocks that lead to depreciation.



Notes: The graph shows how a 1% shock to (LREER_POS) and (LREER_NEG) impact CAB over time.

Figure 4 Dynamic Multiplier of Response of CAB to REER

Concerning the asymmetric effects of Fiscal Deficit on the CAB, it is discerned that both positive and negative shocks are statistically insignificant. Consequently, no significant asymmetric relationship can be established, as illustrated by Figure 5, which portrays the dynamic multiplier plot of FD.



Notes: The graph shows how a 1% shock to (LFD_POS) and (LFD_NEG) impact CAB over time.

Figure 5 Dynamic Multiplier of the Response of the CAB to Fiscal Deficit

Robustness Check

This study utilized the Granger causality test to investigate the causal relationships between fiscal deficit, GNP, REER, and CAB in Malaysia, as presented in Table 6. The results indicate that there is no directional causality between the fiscal deficit and CAB. This means that the movement of the CAB does not follow the movement of the fiscal deficit. The results are consistent with the findings of using the NARDL model, confirming that the twin deficit or twin divergence does not hold in the case of Malaysia but rather supports the REH. The supports on REH, as highlighted in previous studies Saidam and Sarmidi (2017) and Mohammadi and Moshrefi (2012).

Moreover, the findings reveal a unidirectional causality from GNP to CAB, while REER does not exert any causal influence on CAB. The consistent outcomes obtained from both the NARDL and Granger causality tests underscore the absence of an effect of fiscal deficit on CAB, alongside a positive association between economic growth and CAB. This underscores the imperative for Malaysia to prioritize long-term economic growth. Policymakers should prioritize initiatives aimed at fostering sustained economic growth to uphold robust export performance, thereby fortifying the nation's economic stability and resilience.

Table 6 Pair-wise Granger causality tests results

Null hypothesis	F-statistics	Prob.	Causality
LFD does not Granger Cause LCAB	0.105	0.747	No Causality
LCAB does not Granger Cause LFD	0.005	0.942	
LGNP does not Granger Cause LCAB	4.995	0.029**	Causality -Unidirectional
LCAB does not Granger Cause LGNP	0.608	0.439	
LREER does not Granger Cause LCAB	0.342	0.561	Causality -Unidirectional
LCAB does not Granger Cause LREER	7.998	0.007***	
LGNP does not Granger Cause LFD	3.550	0.065*	Causality -Unidirectional
LFD does not Granger Cause LGNP	0.422	0.519	
LREER does not Granger Cause LFD	3.935	0.052*	Causality -Unidirectional
LFD does not Granger Cause LREER	0.394	0.533	
LREER does not Granger Cause LGNP	2.278	0.137	No Causality
LGNPC does not Granger Cause LREER	0.954	0.333	

Note: The asterisks (***), (**) and (*) indicate significant at 1%, 5% and 10% respectively.

Source: Author calculations

CONCLUSION

It is important to emphasise that the fiscal deficit does not seem to have any noticeable effect on the CAB in Malaysia. This suggests that the REH theory is more influential than the Keynesian theory in this particular context. The analysis underscores that exchange rates and economic growth emerge as pivotal determinants influencing the current account dynamics. Therefore, preserving favourable exchange rates and fostering rapid economic expansion is very important to drive the surplus in the current account.

Given the recent slowdown in Malaysia's economy and the decline in goods exports, it is crucial to swiftly implement initiatives like the National Investment Master Plan 2030, MyDIGITAL, the Twelfth Malaysia Plan, and the New Industrial Master Plan 2030 (NIMP 2030) to effectively tackle the current economic challenges. These endeavours have the potential to stimulate economic revitalization and promote long-term growth. In order to guide Malaysia towards a prosperous future, it is crucial for policymakers to exhibit decisive action and the ability to adapt to changing economic conditions.

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