The Ricardian Equivalence in Times of Covid-19: A Case of Indonesia and Malaysia

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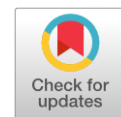
Abstract

This study aims to seek the validity of Ricardian equivalence in Indonesia and Malaysia using Autoregressive Distributed Lag (ARDL). This study finds the invalidity of Ricardian equivalence in the long-term and short-term in both countries. For Indonesia case, during the last three financial crisis happens in 1998, 2008, and 2020 caused by COVID-19, Ricardian equivalence happens only in 1998. More interestingly, this study finds that there is a different relationship between household savings and household expenditure in Indonesia and Malaysia. This study is expected to contribute to the development of body of knowledge, particularly with the case of Ricardian equivalence and Keynes approaches on expansionary fiscal policy as well as practical public policy, particularly related to government budget in crisis and household saving and expenditure.

Introduction

The COVID-19 pandemic caused multiple sectors failure and exacerbated global economics. It is because, the pandemic adversely impacted to not only public health but also critical industries, such as tourism, property, airline, manufacture, MSMEs, and many others. Because during the pandemic, government shows their effort to restrain the spread of COVID-19 by implementing society mobility and economic activity restriction. Such policy arguably increases uncertainty in financial markets

both in the short term (Bouhali et al., 2021; Zhang et al., 2020; Zhao et al., 2023) and in the long term (Liu et al., 2022). Further, it also associates to the turbulence of other macroeconomic indicators such as rising in unemployment (Ahmad et al., 2023), inflation rates (Tsiaplias & Wang, 2022), as well as rising government spending on rehabilitation and treatment for COVID-19 victims and thus, it makes government debt is undeniably rising for many countries across the globe, including Indonesia and Malaysia. This has happened since the World Bank urged governments in the region to declare more expansive fiscal and monetary policy to reduce short-term economic hardship, particularly assisting business and individuals with debt relief (Kumar, 2020).

Responding to World Bank suggestion, the Indonesian government sets for expansionary fiscal policy which focuses on tax incentives, non-fiscal incentives, spending incentives, social assistance, and ensuring the availability of food. Constitutionally, the direction of expansionary fiscal policy during the pandemic period sets by Law no. 2 of 2020 where it refers by Indonesian Government to expand budget deficit above 3% until 2022. However, practically, through the issuance of Presidential Decree no. 54 of 3 April 2020, Indonesian government expand even greater budget deficit from 1.76% to 5.07% to the total of Indonesian GDP. Moreover, Indonesian Government revises its rule and issues Presidential Decree No. 72 of 25 June 2020 and sets even higher budget deficit from 5.07% to 6.34% of total GDP (BI, 2021).

On the other hand, fiscal policy in Malaysia has allotted stimulus packages amounted to RM260 billion or 17% of its GDP, with RM45bil in direct fiscal injection to lessen the economic effects of the outbreak. However, this amount is not enough to cushion the economic impact of Covid-19. (Khalid, 2020). Like Indonesia, Malaysian government also imposes an expansionary fiscal policy by widening the budget deficit. The central government fiscal deficit increased to 6.4% of GDP in 2021 from 6.2% in 2020, reflecting higher spending on pandemic relief and low revenue (Fitchratings, 2022). A deficit of 5.4% was forecasted for 2021, however, the Covid-19 crisis that took lives more than 28,000 people in that year, had forced the government to issue bailout packages, bringing the deficit to 6.5%.

This phenomenon caused by COVID-19 crisis is undoubtedly essential and interesting to discuss further. There are some plausible reasons to address this, first recent studies which discuss macroeconomic phenomenon mostly associates COVID-19 with financial market, unemployment, and inflation. Very limited study discusses COVID-19 and rising government spending. This is essential as rising government spending often associates with the sustainability of the country (Fukuda & Teruyama, 1994) proves by the decrease in household spending (Ricardo, 2005). Not only that, the linkage between rising on government debt and decreasing household spending itself firstly proposes by David Ricardo, a medieval British economist, where it quite contrary to more contemporary economist such as Keynes (Robinson, 1953; Dooley, 1989). Therefore, it is interesting to discuss further the relationship of the Ricardo theorem particularly on the day of crisis so we can prove empirically the assumption. Third, specific study who discusses the Ricardian equivalence such as Adji & Alm (2016) and Ayunasta (2020) with the case of Indonesia, and Rahman, et, al (2013) with the case of Malaysia has been exist. However, there are limited studies which discuss the relationship between rising of government debt and decreasing of household expenditure in time of Covid-19 crisis in Indonesia and Malaysia. Therefore, by

providing a set of empirical tests on the impact of government debt on household spending and the effect of household savings on household spending in the two countries will be expected to contribute to not only the body of knowledge which focuses on comparison between Ricardo and Keynes, but also it benefits public policy that may resulted from such relationship in the two countries.

Literature Review

Ricardian Equivalence and Keynesian Theory

Sources of income for a country generally come from tax and non-tax revenues, which include state loans, grants, sales of state assets, and others. These sources are important to finance government expenditures for the purposes of development and economic growth. However, the government may face a dilemma in financing its country related to the fiscal policy that will be formed, especially in exceptional conditions where the country needs a huge budget to recover the economy, particularly due to crisis rooted problem such asCOVID-19 pandemic. The dilemma occurs between increasing taxes, which is the main source of income, or relying on non-tax state revenues, especially foreign loans.

Increasing the amount of tax has an impact on the economy through the aggregate demand of consumers. However, this is considered inappropriate considering that household income tends to decrease due to the domino effect of COVID-19. Other alternatives, which is raising the amount of debt also associated with the aggregate consumer demand. It is because consumers in the present day may be aware of future taxes that will go up in turn for paying the government debt.

This dilemma is presented by David Ricardo (1817) in his work entitled "On the Principles of Political Economy and Taxation", where he considers that the budget is a deferred tax. Departing from this, Buchanan (1976), which was initiated by Barro (1974) then developed a theory called Ricardian Equivalence. This theory elaborates on the classical economist David Ricardo's work, where current government debt will increase the burden on society in the future as confirmed by Robinson, (1953). It is because, future is unknown and therefore Ricardo (1817) predicted that the budget deficit will generate a negative impact on the economy because it would lead to higher interest rates, reduce savings, weaken economic growth, and decrease consumption. Despite Ricardo assumption, Barro (1989) argues that future is unknown, as people do not live forever, private capital markets are not perfect, taxes and income are not clear in the future, and the amount of taxes is not fully determined by the state because taxes depend on income, expenses, wealth, and so on.

On the other hand, in contrast to Ricardo (1817) Keynes theory affirms that in the short term, expansionary fiscal policy will stimulate consumption (Dooley, 1989; Robinson, 1953). Evidenced from the American economy in 1982, where at that time, budget deficit increase, however real and nominal interest rates decreased, investment spending increased, unemployment fell, and real GNP growth increased (Barro, 1989).

Nevertheless, it is interesting to investigate, compare, and contrast the impact of budget deficit on consumption both in the short-term and long-term, as David Ricardo assumes that people are rational individuals, think far ahead, and care about the welfare of future generations. In this approach, it assumes that consumers are aware that consumption is not solely dependent on current income, but there are other variables including government spending and debt. Hence, the impact of government debt on

public consumption is the focus of Ricardian equivalence (Bernheim, 1987). These assumptions can often only be found in developed countries. However, based on its application, conditions of Ricardian equivalence also often occur in developing countries. This is because developing countries tend to have high debt levels, making it more likely for a budget deficit to occur than in developed countries. Therefore, this study tries to test Ricardian equivalence in 2 developing countries in Southeast Asia, Indonesia, and Malaysia. It is because these two are emerging countries, where testing such theory could give broad implication to the theory itself and practices for two countries.

Indonesian and Malaysian Government Debt

To finance the state budget deficit, it's usually financed by debt, both domestic and foreign sources. This occurs due to the inability and lack of income from taxes as a cost supplier factor. The phenomenon of budget deficits is getting more common among countries. According to Ikiz (2020), it is because, in more liberal economies, the government function is developed where it used to provide a broader function for more than just education, security, and justice. While at the same time, the government has constraints. Therefore, this phenomenon urges the government to find new financial resources and debt is one of the solutions. This is why many countries are having extraordinarily high levels of debt.

Debt is a common problem that is often discussed in all countries, especially in developing countries. The Asian crisis occurred in 1998, and the global crisis in 2008, added to the recent crisis caused by the covid-19 pandemic, has brought a negative impact on almost all Southeast Asia countries, including Indonesia and Malaysia. Figure 1 and 2 show the Indonesian and Malaysian government debt in percentage of Gross Domestic Products (GDP) across the years.

Figure 1. Indonesian Government Debt (Gross, % of GDP)
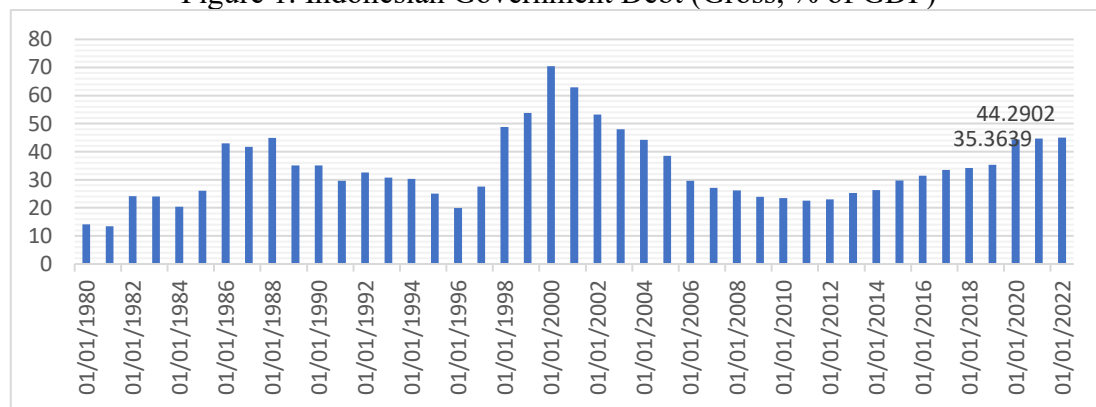
Source: Oxford Economics, the data was collected from Eikon Data Steam, Thomson Reuters

The Figure 1 and 2 show that Indonesia and Malaysia have experienced an increasing government debt in the last 10 years. The trend of the two countries also showed a significant increase in 2020, the year when the covid-19 outbreak began to enter and spread in Indonesia and Malaysia. Where Indonesian government debt increases from 35.3% to 44.2% while Malaysian governkent debt increases from 52.4% to 62%.

Figure 2. Malaysian Government Debt (Gross, % of GDP)
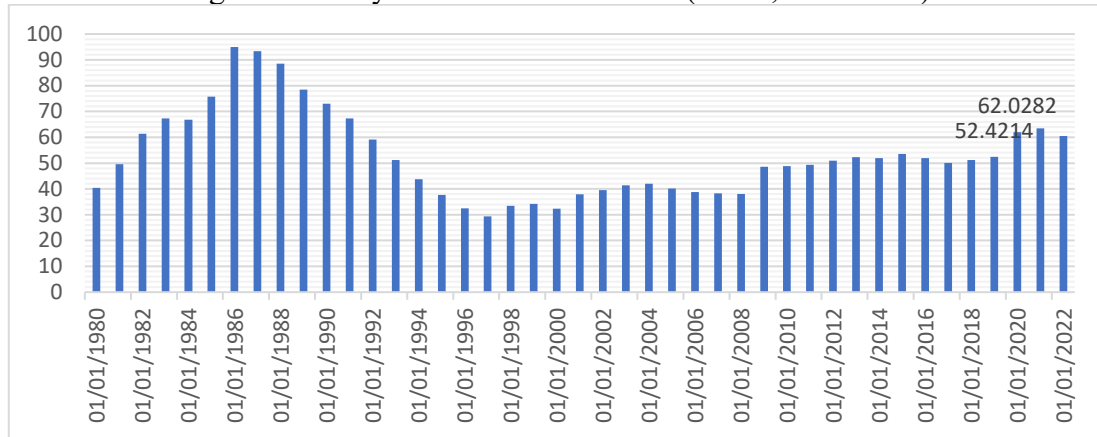
Source: Oxford Economics, the data was collected from Eikon Data Steam, Thomson Reuters

Previous Study

Several previous works have been conducted to empirically test the Ricardian equivalence hypothesis with the case of various countries. However, there is still no consensus on whether the Ricardian equivalence is a valid approximation or not. The result of each work showed a different pattern. Some of them support the hypothesis and argued that the Ricardian equivalence theory is relevant and can be applied. (Kormendi & Meguire, 1990; Choi & Holmes, 2011; Mohammadi & Mosherfi, 2011; Marzouk & Oukhallou, 2016; Nelson & Emmanuel, 2016; Ikiz, 2020; and Boor, 2021). These studies generally found that the budget deficit by the government has no significant effect on changes in the aggregate level of public consumption. While some of it fails to prove the theory and rejects the Ricardian equivalence hypothesis (Ghatak & Ghatak, 1996; Siddiki, 2010; Marinheiro, 2002; Giorgioni & Holden; 2003; Cuaresma and Reitschuler, 2007; Belingher, 2015; and Abada; 2016). The major reasons for the inconsistent conclusions are variations in sample periods, econometric methods, and the approach taken to experimentally measure the various variables.

The difference in the result of the previous study implies inconsistencies on the theorem, hence is interesting to do further research on the application and validity of the Ricardian equivalence hypothesis, especially in developing countries such as Indonesia and Malaysia. This is because, not only some previous studies who also proved the existence of theorem such as (Kormendi & Meguire, 1990; Choi & Holmes, 2011; Mohammadi & Mosherfi, 2011; Marzouk & Oukhallou, 2016; Nelson & Emmanuel, 2016; Ikiz, 2020; and Boor, 2021) argue that the theory imposes several ideal assumptions, which mostly that the theorem can only be founded in developed countries due to its rational consumer behaviour, but also examining the empirical validity of Ricardian equivalence in developing country is important from a policy perspective. This is because in the light of the International Monetary Funds (IMF) stabilization initiatives, particularly in the developing countries raises some the question including whether the Ricardian equivalence is a reliable and crucial estimation (Khalid, 1996). If the Ricardian equivalcen is valid in developing countries, then the IMF's proposed programs based on demand management policies which aimed at reducing fiscal deficits need to be revised, since changes in fiscal policy have no impact on aggregate demand.

Hence, this study aims to test the validity of the Ricardian equivalence theory in the 2 ASEAN developing countries, Indonesia and Malaysia. Previously, the study that discussed this scope has been conducted by Adji & Alm (2016) and Ayunasta (2020) with the case of Indonesia, and Rahman, et, al (2013) with the case of Malaysia.

Adji & Alm (2016) provided a battery of empirical tests on the effects of Indonesian government debt finance, by focusing on three empirical tests: effects on consumption, current account balance, and on the interest rate. Adji & Alm (2016) finds that that most of the estimations strongly reject the Ricardian paradigm in the short-term. Nevertheless, their result generally suggests that debt financing raises the interest rate, increases current consumption at the expense of future consumption, slows exports, and encourages imports by appreciating the currency.

Then, Ayunasta, et.al (2020) applied the concept of Ricardian equivalence to the Indonesian foreign debt problem in the period of 1997 to 2017. The result of Ayunasta, et.al (2020) finds that from the foreign debt perspective, the Ricardian equivalence applies in Indonesia after the 1998 Asian crisis, as external debt affects public consumption. Conversely, Ricardian equivalence does not hold in Indonesia after the 2008 global crisis because external debt does not affect government consumption.

In the Malaysian context, Rahman, et.al (2013) tested the validity of the Ricardian equivalence with respect to the government debt behaviour and government expenditure on private consumption using ARDL bound test. The result then rejects the existence of the Ricardian equivalence hypothesis statistically. This study also highlighted on how Malaysians view government debt as net wealth and how public spending itself has a complementary impact on individual consumption.

Research Method

Model Specification

To examine the theorem, this study uses Auto Regressive Distributive Lag (ARDL) method. It is because, this method allows short-term and long-tern analysis on the theorem. According to the Ricardian equivalence theorem developed by Buchanan, (1976), household expenditure, income, and savings are associated with government debt. The function of the theorem is expressed as follows:

$$\int^{\infty}_{t=0} e^{-R(t)} C(t) dt \leq K(0) + D(0) + \int^{\infty}_{t=0} e^{-R(t)} [W(t) - T(t)] dt \qquad (1)$$

where C(t) is consumption, K(0) is capital, D(0) represents the government bonds (debt being associated to D(0) > 0), and W(t) be labor income. Supposedly, to test the theorem, this study must employ all the data. Where the derived into equation (2):

$$C \leq K(0) + D(0) + [W-T] \qquad (2)$$

However, due to the availability of the data issues, this study attempts to simplify the function to econometric function (3) where it disregards the capital of the household. Hence this study focuses on expenditure, government debt, and savings. This approach is also developed by Ikiz (2020):

$$HFE_t = b_0 + b_1 GD_t + b_2 HS_t + e_t \qquad (3)$$

where HFE is household final expenditure which represents household consumption, GD stands for government deficit which represents surplus and deficit of government expenditure in the specific period, and HS stands for household savings which

represents labor income minus tax. Then, by transforming the equation (3) into natural log ARDL error correction model, the equation is written as follow:

$$\Delta lnHFE_t = b_{0i} + \sum_{i=1}^{p} b_{1i}\Delta lnGD_{t-i} + \sum_{j=1}^{q} b_{2j}\Delta lnHS_{t-j} + \gamma ECT_{t-1} + \varepsilon_t \quad (4)$$

Data

The study utilized quarterly time series data of Indonesia and Malaysia for the period 2010-2022. So, in total, there will be 104 observations, and each country has 52 observations. The data on household final expenditure, government deficit, and household savings were sourced from Statistics bureau and central bank of each country in which here is retrieved from Eikon data stream, Thomson Reuters.

Analytic Techniques

1) Unit root test: Prior to the data analysis, Augmented Dickey-Fuller (ADF) and Phillip-Peron (PP) stationery tests will employ in this study.
2) Cointegration test (Bound test): Cointegration test is used to look at the relation of short-term and long-term effects on the specified model. This study will use bound test to seek the cointegration test as suggested by Pesaran et al., (2001).
3) Model selection: ARDL allows different lags for each variable. Numerous models will result from the combination of lag and variable such as Aiken Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn criterion (HQ) are used in this study.
4) Long-term and Short-term estimation: This analysis is intended to empirically prove the theorem in the long-term and short-term.
5) Correlation test (LM test): Correlation test is used to ensure that error in the model is serially independent or not (Pesaran et al., 2001).
   $H_0 \geq 0.05$, the errors are serially independent (no autocorrelation)
   $H_1 \leq 0.05$, the errors are serially correlated (autocorrelation)
6) CUSUM stability test: To find out whether the model is dynamically stable or not, CUSUM stability test is employed. This is suggested by Pesaran et al., (2001).

Results and Discussion

Results

This study uses ADF and PP unit root tests. The results of unit root tests are presented in the Table 1. The table shows that only household fixed expenditure (HFE) of Indonesia and household savings (Csavings) of Indonesia that found to be stationary at their first difference. Other variables form both countries are found to be stationary at levels, hence integrated into order zero [I(0)] and at first difference, hence integrated of order one [I (1)]. Since the unit root test results indicated the integration of orders in which there is zero and one [I (0) and I (1)], it is therefore appropriate to proceed with the estimation of ARDL model with maximum lag 2 ((Pesaran et al., 2001).

In terms of the cointegration test, this study employed the bound test. The results bound tests are presented in table 2. The table shows that F-Statistics of Indonesia and Malaysia are lower than the I (0) and I (1) value in any significant percentage. This means that there is no long-term relationship between government debt, savings, and household fixed expenditure in both Indonesia and Malaysia.

Table 1. Unit Root Test

Variable	ADF		PP		Conclusion
	Level	First Difference	Level	First Difference	
lnHFE (Indonesia)	-1.31996 (0.6135)	-7.80391 (0.0000) ***	-2.628993 (0.0939) *	-8.771086 (0.0000) ***	I (0)
lnHFE (Malaysia)	-1.705227 (0.4226)	-7.301914 (0.0000) ***	-1.833910 (0.3603)	-8.154252 (0.0000) ***	I (1)
lnGD (Indonesia)	-4.858659 (0.0002) ***	-11.95910 (0.0000) ***	-4.802498 (0.0002) ***	-17.56240 (0.0000) ***	I (0)
lnGD (Malaysia)	-5.660552 (0.0000) ***	-12.08046 (0.0000) ***	-5.659106 (0.0000) ***	-27.76700 (0.0000) ***	I (0)
lnCSavings (Indonesia)	-2.85807 (0.9191)	-7.635451 (0.0000) ***	-1.968387 (0.2995)	-8.536231 (0.0000) ***	I (1)
lnCSavings (Malaysia)	-1.358407 (0.5930)	-2.343759 (0.1639)	-4.592870 (0.0005) ***	-48.61776 (0.0005) ***	I (0)

Note: The signs ***, **, and * indicate significance at 1 per cent, 5 per cent, and 10 per cent levels respectively

Table 2. Cointegration Test (Bound Test)

Indonesia					
Test statistic	F-Statistic Value		Sig.	I (0)	I (1)
	0.965402		10%	2.788	3.513
	Actual sample size		5%	3.368	4.178
	50		1%	4.695	5.758
Malaysia					
Test statistic	F-Statistic Value		Sig.	I (0)	I (1)
	1.953682		10%	2.788	3.513
	Actual sample size		5%	3.368	4.178
	51		1%	4.695	5.758

Table 3. Lag-length selection (Indonesia)

Model	AIC*	SC	HQ*	Specification
16	-5.955147	-5.725704	-5.867774	ARDL (1,0,2)
17	-5.928388	-5.737186	-5.855577	ARDL (1,0,1)
7	-5.921720	-5.654036	-5.819784	ARDL (2,0,2)
8	-5.918076	-5.688633	-5.830703	ARDL (2,0,1)
13	-5.817807	-5.650124	-5.815872	ARDL (1,1,2)
14	-5.889265	-5.659822	-5.801892	ARDL (1,1,1)
4	-5.883345	-5.577422	-5.766848	ARDL (2,1,2)
5	-5.881201	-5.613518	-5.779266	ARDL (2,1,1)
10	-5.787283	-5.572360	-5.761786	ARDL (1,2,2)
11	-5.849424	-5.581741	-5.747488	ARDL (1,2,1)
1	-5.843799	-5.499635	-5.712740	ARDL (2,2,2)
2	-5.849424	-5.535622	-5.725048	ARDL (2,2,1)
18	-5.731950	-5.578988	-5.673701	ARDL (1,0,0)
15	-5.696746	-5.505544	-5.623935	ARDL (1,1,0)
9	-5.692873	-5.501670	-5.620062	ARDL (2,0,0)
12	-5.657823	-5.428380	-5.570450	ARDL (1,2,0)
6	-5.657107	-5.427664	-5.569733	ARDL (2,1,0)
3	-5.618177	-5.350494	-5.516242	ARDL (2,2,0)

*Selected as best model (estimation)

Table 3 shows the lag-length selection for Indonesian's Ricardian equivalence model. It shows that there are 18 ARDL models for Indonesia's data with lag maximum 2. Referring to Aiken Information Criterion (AIC), Schwarz Criterion (SC),

and Hannan-Quinn criterion (HQ), table 3 shows that the selected model for Indonesia's data is model 16, since AIC and HQ share similar results. Model 16 itself consists of lag ARDL (1,0,2), meaning that the lag for household expenditure is at 1, government debt is at zero, and savings is at 2. This implies that in the short term, household expenditure is predicted to affect itself at the first lag while savings will affect the household expenditure at the second lag.

Table 4. Lag-length selection (Malaysia)

Model	AIC*	SC*	HQ*	Specification
18	-3.074997	-2.922035	-3.016749	ARDL (1,0,0)*
15	-3.067040	-2.875838	-2.994229	ARDL (1,1,0)
17	-3.045678	-2.854476	-2.972867	ARDL (1,0,1)
14	-3.045657	-2.816214	-2.958284	ARDL (1,1,1)
12	-3.037398	-2.807955	-2.950025	ARDL (1,2,0)
9	-3.037020	-2.845818	-2.964209	ARDL (2,0,0)
6	-3.027630	-2.798187	-2.940257	ARDL (2,1,0)
11	-3.024750	-2.757067	-2.922815	ARDL (1,2,1)
16	-3.011949	-2.782506	-2.924676	ARDL (1,0,2)
13	-3.008540	-2.740857	-2.906605	ARDL (1,1,2)
8	-3.006992	-2.777549	-2.919619	ARDL (2,0,1)
5	-3.005749	-2.738065	-2.903813	ARDL (2,1,1)
3	-2.999596	-2.731913	-2.897661	ARDL (2,2,0)
10	-2.991222	-2.685298	-2.874724	ARDL (1,2,2)
2	-2.986108	-2.680185	-2.869611	ARDL (2,2,1)
7	-2.972635	-2.704952	-2.870700	ARDL (2,0,2)
4	-2.968552	-2.662628	-2.852055	ARDL (2,1,2)
3	-2.952145	-2.607981	-2.821085	ARDL (2,2,2)

*Selected as best model (estimation)

Table 5. Short-Term and Long-Term Estimation

	Indonesia	Malaysia
Long-term		
LnGd	0.007513	0.066483
	(0.6764)	(0.3127)
LnSavings	0.482004	0.127909
	(0.0000) ***	(0.4742)
C	17.41751	21.08992
	(0.0000) ***	(0.0000) ***
Short-term		
C	1.833880	2.147241
	(0.3528)	(0.0528) **
LnHFE(-1)	-0.105289	-0.101814
	(0.3801)	(0.0525) **
LnGD	0.000791	0.006769
	(0.5649)	(0.2713)
LnSavings	0.050750	0.013023
	(0.4176)	(0.5360)
LnSavings(-1)	0.456431	
	(0.0000) ***	
D(LnSavings(-1))	0.111919	
	(0.0883) *	

Note: The signs ***, **, and * indicate significance in 1 per cent, 5 per cent, and 10 per cent level respectively

Meanwhile, Table 4 shows the lag-length selection for Malaysia's Ricardian equivalence model. Like Indonesia's selection lag-lag, table 4 shows that there are 18 ARDL models for Malaysia's data, since it uses maximum lag 2, similar to Indonesia's data. Referring to Aiken Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn criterion (HQ), table 4 shows that the selected model for Indonesia's data is model 18, since AIC, SC, and HQ share similar results. The model 18 itself consist of lag ARDL (1,0,0), meaning that the lag for household expenditure is at 1, while government debt and savings is at zero. This implies that in the short term, household expenditure predicted to affect itself at the first lag while savings will affect the household expenditure at the zero lag.

Table 5 shows the long-term and short-term estimation of the Ricardian equivalence in Indonesia and Malaysia. Table 5 shows that government debt is not affecting the household expenditure in both countries as the probability of significance is higher than 1%, 5% or 10% in long-term and short-term. Moreover, savings is significantly affecting the household expenditure in both long-term and short-term in Indonesia while it appears conversely in both long-term and short-term in Malaysia. However, household expenditure in Malaysia finds to affect itself in the short-term in the lag 1.

Table 6. Correlation Test (LM Test)

Indonesia			
F-Statistic Value	0.856154	Prob. F (2,42)	0.4321
Obs*R-squared	1.958611	Prob. Chi-Square (2)	0.3756
Malaysia			
F-Statistic Value	1.341189	Prob. F (2,45)	0.2718
Obs*R-squared	2.869011	Prob. Chi-Square (2)	0.2381

Table 6 shows the result of correlation test using LM test in both countries Indonesia and Malaysia. This is essential to prove that the estimations on this study are robust. The result shows that Chi-Square of Indonesia 0.3756 and Chi-Square of Malaysia 0.2381. The results indicate that Chi-Square is above 0.05 in both countries and hence it accepts H_0 where the errors are serially independent and hence no autocorrelation found in both ARDL estimations.

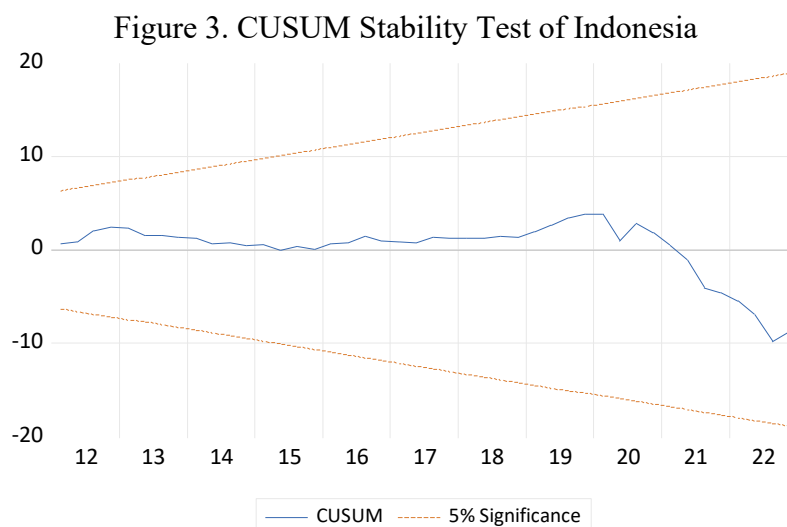Figure 3. CUSUM Stability Test of Indonesia
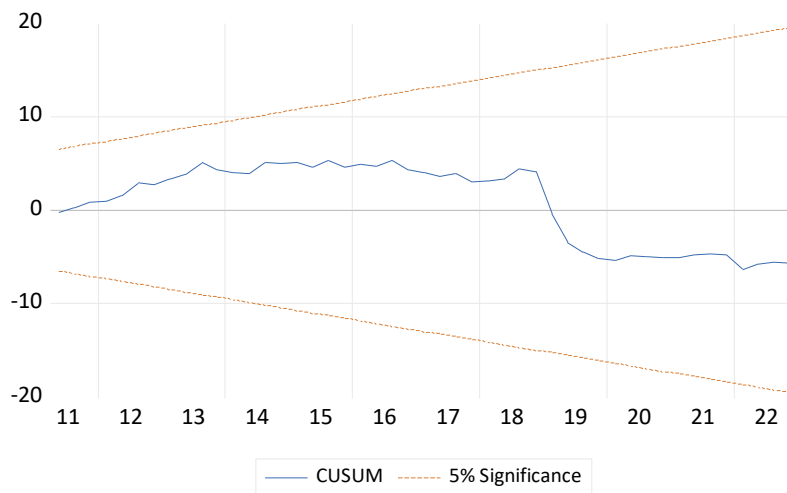
Figure 4. CUSUM Stability Test of Indonesia

Figure 3 and Figure 4 show the result of CUSUM stability test in both countries Indonesia and Malaysia respectively. This is intended to show the stability of the data as it is essential to prove that the estimations on this study are robust. Figure 3 and Figure 4 shows that both Indonesia and Malaysia data is stable as the graph shows that blue line lies in between the 5% significance.

Discussion

Referring to the long-run and short-run estimation, it is known that there are at least three findings that need to be discussed further. First, it finds that government debt is not affecting the household expenditures both in long-term and short-term in Indonesia and Malaysia. This finding implies that, Ricardian equivalence which states that consumers are rationally assume that budget is a deferred tax, hence rising in budget that sourced from debt will encourage them to slow the consumption does not exist in Indonesia and Malaysia.

Further, this finding confirms Keynes theory applies in Indonesia and Malaysia where the theory affirms that in the short term, expansionary fiscal policy will stimulate consumption (Dooley, 1989; Robinson, 1953). This finding supported by the evidence from the American economy in 1982, where at that time, budget deficit increase, however real and nominal interest rates decreased, investment spending increased, unemployment fell, and real GNP growth increased (Barro, 1989). Third, with respect to the effect of COVID-19, this finding supports Ayunasta, et.al (2020) who find that there is no relevance of Ricardian equivalence in Indonesia after 2008. However, Ayunasta, et.al (2020) also states that Ricardian equivalence exists in Indonesia after the monetary crisis in 1998. This means that during the three financial crises which happened in Indonesia in 1998, 2008, and 2020 caused by COVID-19, the household consumption is most significantly affected only in 1998.

Furthermore, the long-term and short-term ARDL estimation shows that savings is significantly affect household expenditure in Indonesia, where the rising of savings associates with the rising of household expenditure by 48% in the long-term and 11% to 45% in the short-term. This finding implies that, first Indonesian relies on their savings to maintain their consumption during the crisis caused by COVID-19,

although Indonesian government launched many financial assistances program during that period. Second, in the long-term, Indonesian household expenditure also relies with their savings. This confirms by (Pardede & Zahro, 2017) where their study states that upper-middle income people of Indonesia increase their savings and linearly increase their consumption particularly on leisure and on luxury goods and services. Further, supports by Shofa (2023), Indonesia has reclaimed their title as upper-middle income country and predicted transformed into developed country in the next 5 years may justify why savings is significantly affect household expenditure of Indonesia in the long-term.

In contrast, long-term and short-term ARDL estimation shows that savings is not significantly affecting the household expenditure in Malaysia. The plausible reason to justify this is that Malaysian does not relies on their savings to maintain their household expenditure in the short-term and subsequently shows that financial aid program stimulates by Malaysian government responding crisis caused by COVID-19 is somehow successful. Second, in the long-term, the increasing of saving does not affect household expenditure, because overspending, particularly from lower income level group is happening in Malaysia as confirmed by (Liyana et al., 2020). Therefore, Indonesian government may replicate the fiscal policy that occurred in Malaysia which focuses on more financial aid during the crisis.

Conclusion

The validity of Ricardian equivalence is still debated among scholars. It is because many studies found that Ricardian equivalence is valid, and many studies state the contrary. In accordance with the higher government deficit in many countries including two neighboring countries due to the rising government expenditure and the downing of the government income because of the COVID-19 crisis, therefore this study aims to seek the validity of Ricardian equivalence in both two countries. Using Autoregressive Distributed Lag (ARDL) estimation, this study found the invalidity of Ricardian equivalence on the long-term and short-term in both countries. This study confirms that Keynes theory applies in Indonesia and Malaysia. More interestingly, this study finds that in the span of 1998 to 2020 where Indonesia has at least suffered three times of financial crisis, Ricardian Equivalence find exist only in the short-term of 1998 crisis as confirm by Ayunasta, et.al (2020). While Ayunasta, et.al (2020) states that the Ricardian equivalence does not exist after the 2008 crisis, this study confirms that it also does not exist in 2020 crisis due to COVID-19.

Moreover, there are differences on the effect of saving to household expenditure in Indonesia. While savings find significantly affect household expenditure in short-rem and long-term in Indonesia, it inversely finds in Malaysia. This implies that in the short-term, Indonesian relies on their savings to maintain consumption during the crisis caused by COVID-19, while Malaysian relies on other possible factors including financial aid program initiated by Malaysian government. This shows that somehow Malaysian government has successfully handling their COVID-19 program rather than Indonesian government. Further, in the long-term, Indonesian, particularly upper-middle income group, also relies on their savings to consume as confirmed by Pardede & Zahro, (2017). These findings are expected to contribute the development of body of knowledge particularly in related to the Ricardian theorem and Keynesian approach

as well as practical public policy, particularly related to government budget in crisis and household saving and expenditure.

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