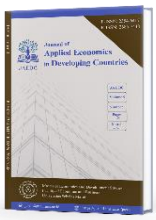

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GOVERNMENT DEBT VS. CONSUMPTION: TESTING RICARDIAN EQUIVALENCE IN SIX ASEAN COUNTRIES

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ABSTRACT

Fiscal policy in the form of government debt becomes an exciting debate using the Ricardian Equivalence Hypothesis. Because the Ricardian Equivalence Hypothesis is opposite to Keynes's theory, the Ricardian Equivalence Hypothesis assumes that the community behaves rationally; government debt at this time will lead to a public burden in the future, and government debt will not affect society's consumption. This study examines the validity of the Ricardian Equivalence Hypothesis in six ASEAN countries using secondary data on household consumption, government debt, gross domestic product (GDP), government expenditure, and tax revenue. The study uses a data panel model in the period following the Asian crisis in 1998 and the period following the global crisis in 2008. The aftermath of the Asian crisis showed a variable of government debt, gross domestic product, and government expenditure with a significant overpost on household consumption. In contrast, the tax revenue variable negatively affected household consumption. The results estimation of the global post-crisis estimate es indicate gross domestic product variable with significant overage on household consumption while the government debt variable, government expenditure, and tax revenue have a negative relationship to household consumption.

1. INTRODUCTION

Fiscal policy involving government debt is a subject of debate due to the Ricardian Equivalence Hypothesis proposed by Barro (1974). According to this hypothesis, government debt does not affect the economy through public consumption because the public anticipates future tax burdens. However, this hypothesis is contentious and contradicts Keynesian theory, leading to varied support among researchers. Several studies support the validity of the Ricardian Equivalence Hypothesis, including research by Mosikari & Eita (2017) in the country of Lesotho, Marzouk & Oukhallou (2017) in the country of Morocco, and Ayunasta et al. (2020)in the country of Indonesia after the 2008 global crisis.

Meanwhile, some researchers reject the enactment of the Ricardian Equivalence Hypothesis and find results that align with the Keynesian view; Keynes argues that fiscal policy to finance more spending will affect public consumption. Research results that refuse the Ricardian Equivalence Hypothesis, namely Shamsi et al. (2016) in Pakistan, Abada (2016) in Nigeria, then research by Cassar et al. (2018) in Malta, Pickson & Ofori-Abebrese (2018) in African countries namely Botswana, Gambia, Ghana, Kenya and Nigeria. Further research was conducted by Nosakhare (2019) in Nigeria, and research was conducted by Ayunasta et al. (2020) in Indonesia after the 1998 Asian crisis.

Public consumption can change if a country experiences an economic crisis, such as the Asian crisis in 1998 and the global crisis in 2008. Interestingly, after the crisis occurred, it increased government debt in most ASEAN countries to restore economic stability, thus impacting the country's economic growth. Determining the direction of a country's fiscal policy can increase the economy's output (Chaerani, 2018). Economic growth can also be used as material for calculating income received by the community for activities in consumption activities. According to research conducted by Pickson and Ofori-Abebrese (2018), the results positively influenced gross domestic product with public consumption in 5 African countries: Botswana, Gambia, Ghana, Kenya, and Nigeria.

Different results were obtained by Mosikari and Eita (2017) in Lesotho, which found a negative relationship between gross domestic product and public consumption. The economic growth rate is also influenced by the strategic policies undertaken by the government in infrastructure development projects, which are benchmarks in the government's efforts to carry out appropriate fiscal policies. This fiscal policy is essential for regulating government spending to effectively increase the country's economy. However, the high government spending has an impact on the increasing need for sources of state revenue. Nosakhare's research (2019) in Nigeria found that government spending hurt consumption levels.

However, these findings contrast with the research by Kusairi et al. (2019) in 18 Asia Pacific countries, which found that the results of government spending had a positive effect on consumption. In order to accommodate the financing of government spending, which is increasing every year, it is necessary to increase the amount of tax revenue to support the balance of the budget. Research by Meissner and Rostam-Afschar (2017) in Germany found that tax revenue changes significantly affected consumption levels. However, these findings contradict Saraswati and Wahyudi's research (2018) in Indonesia, which found that tax revenues did not impact consumption rates in Indonesia.

There is a research gap. This makes researchers interested in exploring the effect of government debt on household consumption and testing whether it applies or not Ricardian Equivalence Hypothesis in the ASEAN-6 countries, which include Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam during the aftermath of the 1998 Asian crisis and after the 2008 global crisis, by using the variables taken, namely household consumption, economic growth or gross domestic product, government spending, tax revenue, and government debt.

In the Ricardian Equivalence Hypothesis paradigm, it is assumed that consumer behavior is rational in seeing the government debt problem and its impact in the future. Current tax cuts will impact the future. This will trigger consumers to save their current income to finance taxes in the future so that current consumption will not change. In principle, debt and tax cuts do not affect consumption (Barro, 1989).

The research hypothesis is formulated as follows:

H1 : Gross Domestic Product suspected to have a positive and significant effect on the rate of household consumption in ASEAN 6 countries.

H2 : Government spending is thought to have a positive and significant effect on the rate of household consumption in ASEAN 6.

H3 : Tax revenue is suspected to have a positive and significant effect on the rate of household consumption in ASEAN 6 countries.

H4 : Government debt is suspected to have a positive and significant effect on the rate of household consumption in ASEAN 6 countries.

2. RESEARCH METHODS

The scope of this study will review household consumption variables, gross domestic product, government output, tax receipts, and government debt in 6 ASEAN countries, including Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam, in 2 time periods, namely after the 1998 Asian crisis and after the 2008 global crisis. The type of data in this study is quantitative and secondary data taken through sources from the World Bank and IMF; the secondary data used is panel data, which is a combination of 2 data, including time series data (time series) with cross-place data (cross-section) collected from 1997-2018.

The operational definition of variables in this study is of two kinds: dependent and independent variables. Consists of household consumption as the dependent variable. Meanwhile, several independent variables include gross domestic product, government spending, tax revenue, and government debt.

The research model applied in this study is as follows:

$$Cit = \beta 0 + \beta 1GDPit + \beta 2GEit + \beta 3TAXit + \beta 4GDit + \epsilon it$$

Where as:

Cit = Dependent variable for entity *i* at time *t*
$\beta 0$ = Intercept
$GDPit$ = Gross Domestic Product for entity *i* at time *t*
$GEit$ = Government Expenditure for entity *i* at time *t*
$TAXit$ = Tax Revenue for entity *i* at time *t*
$GDit$ = Government Debt for entity *i* at time *t*
ϵit = Error term for entity *i* at time *t*

3. RESULTS AND DISCUSSION

3.1. RESULTS

Model Selection

The regression techniques to be tested on panel data include CEM (common effect), FIVE (fixed effect), and REM (random effect) selection using model testing, namely Chow testing, Hausman testing, and Long Range Multiple. First, the selection of the best model after the Asian crisis was carried out with the Chow test, which is known to produce a probability value of 0.0000. So that figure explains (0.000 < 0.05) at a = 0.05. So, the best model between CEM and FEM used is FEM. After that, in the Hausman test, it is known that the Hausman test produces a probability count value of 0.5080. This figure explains (0.000 < 0.05) at a = 0.05. So, the best model between FEM and REM to be used is REM. Furthermore, it is known that the LM test shows a probability value of 0.0013; this figure explains (0.00 <0.05) at a = 0.05. So, the best model between REM and CEM to be used is REM. This reveals that the best model in the post-crisis regression analysis of Asia is REM (random effect model).

The second is to select the best model after the global crisis; it is known that the Chow test shows a probability value of 0.0000. This figure explains (0.000 < 0.05) at a = 0.05. So, the best model between CEM and FEM used is FEM. After that, it is known that the Hausman test shows a probability value of 0.8099; this figure explains (0.000 <0.05) at a = 0.05. So, the best model between FEM and CEM that is used is REM. Furthermore, the LM test is carried out; it is known that the LM test shows a probability value of 0.000; this figure explains (0.000 < 0.05) at a = 0.05. So, the best model between REM and CEM is the REM (random effect model). This confirms that the best model used in the post-global crisis regression analysis is REM (random effect model).

Post-Asian Crisis Statistical Test Results

Table 1. Post-Asian Crisis Significance Test Results

Independent variable	Coefficient	Standard Erorr	Statistical t value	Probability
C	-1.185273	0.755337	-1.569198	0.1218
GDP	0.901852	0.078424	11.49971	0.0000
GE	0.140051	0.051743	2.706684	0.0088
TAX	-0.057582	0.047711	-1.206901	0.2321
GD	0.048354	0.015964	3.028965	0.0036

Source: Processed data, 2020

By using the best estimation model in post-crisis Asia, namely, REM, as seen from Table 1, the table above shows that the variables gross domestic product has a t-statistic value of 11.49971, thus explaining (11.49971 > 1.670) at t table = 1.670. The statement shows that the variable gross domestic product significantly affects the household consumption rate in ASEAN 6 countries. The government expenditure variable has a t-statistic of 2.706684, thus explaining (2.706684 > 1.670) at t table = 1.670. The statement shows that the government spending variable positively affects the household consumption rate in 6 ASEAN countries. The tax revenue variable has a t-statistic of -1.206901, thus explaining (-1.206901 < 1.670) at t table = 1.670. The statement shows that the tax revenue variable does not significantly affect the household consumption rate in ASEAN 6 countries. The government debt variable has a statistical value of 3.028965. So that explains (3.028965 > 1.670) at t table = 1.670, which shows that the government debt variable positively affects the household consumption rate in 6 ASEAN countries.

Then the results of the F-statistic test were obtained for 0.000, thus confirming (0.000 < 0.05) at a = 0.05. So, the F test reveals that the variable gross domestic product, government spending, tax revenues, and government debt simultaneously positively affect the household consumption rate in 6 ASEAN countries. Then, a determinant coefficient of 0.963372 is found, meaning that 96% of the variable variations in household consumption in ASEAN 6 countries can be explained by variables across domestic product, government spending, tax revenue, and government debt. Meanwhile, the remaining 0.04% can be explained by other variables outside the model.

Post Global Crisis Statistical Test Results

Table 2. Post Global Crisis Significance Test

Variable	Coefficient	Standard Error	Statistical t value	Probability
C	0.873593	0.864869	1.010086	0.3164
GDP	0.838805	0.104297	8.042442	0.0000
GE	0.115331	0.095179	1.211720	0.2303
TAX	-0.000670	0.000650	-1.031175	0.3065
GD	0.000264	0.001093	0.241463	0.8100

Source: Processed data, 2020

Meanwhile, in testing with the best analytical model on the global crisis that will be used, namely REM (random effect model), which can be seen from Table 2, the table above shows that gross domestic product has a t-statistic value of 8.042442. So that explains (8.042442 > 1.670) at t table = 1.670. The t-test results indicate that the economic growth variable positively affects household consumption in the six ASEAN countries. The government expenditure variable has a t-statistic value of 1.211720, less than the critical t-value of 1.670. Therefore, the government expenditure variable does not significantly affect household consumption in the ASEAN 6 countries. The tax revenue variable gets a t-statistic value of -1.031175. So that explains (-1.031175 < 1.66629) at t table = 1.670. That is, the t-test states that the tax revenue variable negatively affects the household consumption rate in the country in ASEAN 6. The government debt variable has a t-statistic value of 0.241463. So that explains 0.241463 < 1.66629) at a = 1.670. This means that the results of the t-test state that the government debt variable has a negative effect on the rate of household consumption in ASEAN 6 countries.

The results of the F test show that the statistical probability value is 0.0000; this confirms that the value is smaller than a = 0.05. So, the F test reveals that the variables GDP, government spending, tax revenues, and government debt simultaneously have a positive effect on the rate of household consumption in ASEAN 6 countries. After that, the results of the determinant coefficient are 0.96, meaning 96% variation from household consumption in ASEAN countries. -6 can be explained by variables across domestic product, government spending, tax revenue, and government debt. At the same time, the remaining 0.04% is explained by other variables outside the model.

Research Interpretation

Based on a series of model selection tests confirms that the best model in the 1998 post-crisis estimation and 2008 post-crisis estimation is the REM approach (random effect model). The similarity of the panel data regression results generated from the REM approach model reveals differences in the results of the post-Asian and post-global crises regression estimates. The results of the post-crisis regression estimation of Asia show that variable gross domestic product, government spending, and government debt have a positive effect on the rate of household consumption. In contrast, the tax revenue variable has a negative effect on the rate of household consumption. Moreover, suppose you look at the post-global crisis regression estimation results. In that case, we get that variable gross domestic, which positively affects the rate of household consumption. In contrast, the variables of government spending, tax revenues, and government debt have a negative effect on the rate of household consumption. The REM model after the Asian crisis was obtained, namely:

$$CONSit = -1.185273 + 0.901852*GDPit - 0.140051*GEit - 0.057582* TAXit + 0.048354*GDit + et.$$

And here are the results of the REM model after the global crisis, namely:

$$CONSit = 0.873593 + 0.8388805*GDPit + 0.115331*GEit - 0.000670*TAXit + 0.000264*GDit + eit.$$

Where as:
CONS = Household Consumption
GDP = Gross Domestic Product
GE = Government Expenditures
TAX = Tax revenue
GD = Government Debt

3.2. DISCUSSION

Based on the results of the post-crisis Asian regression estimation on variables across domestic, it has a statistically positive effect at a = 0.05 on the rate of household consumption in 6 ASEAN countries. Variable coefficient value gross domestic product worth 0.901852. This confirms that every USD 1 increase in economic growth increases the household consumption variable of USD 0.901852. Furthermore, the post-crisis regression results in 2008 on variables across domestic but has a statistically positive effect at a = 0.05 on the rate of household consumption in 6 ASEAN countries. Variable coefficient value gross domestic product equal to 0.838805. That is when every increase in the gross domestic product of 1 USD impacts increasing household consumption variables of 0.838805 USD.

Effect estimation results in gross domestic product on household consumption in the 1998 post-crisis estimate, and the 2008 post-crisis estimate showed the same results, namely the relationship between gross domestic variables but positively influencing household consumption variables in 6 ASEAN countries. So it is consistent with research conducted by Pickson and Ofori-Abebrese (2018) in 5 African countries, namely Botswana, Gambia, Ghana, Kenya, and Nigeria, which found a positive relationship between gross domestic product and public consumption. In line with Ayunasta's et al. (2020) research in Indonesia, economic growth affected the rate of household consumption after the Asian and global crises.

Based on the estimation results of the post-crisis Asian regression on the variable, government spending has a statistically positive effect at a = 0.05 on the rate of household consumption in 6 ASEAN countries. The result of the variable coefficient of government spending is 0.140051. This explains that every USD 1 increase in government expenditure increases household consumption variables of USD 0.140051. Meanwhile, the post-global crisis regression results on government expenditure variables have a statistically negative effect of a = 0.05 on the rate of household consumption. The coefficient value of the government expenditure variable is 0.115331. This explains that increased government spending of 1 USD decreased the household consumption variable by 0.115331 USD.

The results of estimating the effect of government spending on household consumption in post-crisis Asia estimates are consistent with Kusairi's et al. (2019) in 18 Asia-Pacific countries, finding that government spending positively affects consumption rates. Meanwhile, the estimation results of the global crisis are in line with the results obtained by Nosakhare's (2019) in Nigeria, which stated a negative relationship to consumption, as well as research conducted by Saraswati and Wahyudi's (2018) in Indonesia found that changes in the amount of government spending did not have an impact on consumption after Asian crisis and post-global crisis.

Based on the results of the 1998 Asian post-crisis regression on the tax revenue variable, it has a statistically negative effect of a = 0.05 on the rate of households in 6 ASEAN countries. The coefficient value of the tax revenue variable is -0.057582. This confirms that every USD 1 increase in tax revenue results in a USD 0.057582 decrease in the household consumption variable. Furthermore, the post-global crisis regression results on the tax revenue variable have a statistically negative effect at a = 0.05 on the rate of households in 6 ASEAN countries. The coefficient value of the tax revenue variable is -0.000670, which confirms that every increase in tax revenue of 1 USD results in a decrease in the household consumption variable of 0.000670 USD.

The results of the estimation of tax revenue on household consumption in the post-Asian crisis and post-global crisis show the same results as the effect of tax revenue on the rate of household consumption in 6 ASEAN countries so that it is in line with the research results obtained by Saraswati and Wahyudi (2018) in Indonesia which shows that there is no impact from tax revenues on the rate of consumption in Indonesia and Chaerani's (2018) in Indonesia which reveals a reduction in taxes has multiplier effects on the income of a country because higher income causes consumption to increase.

Based on the results of the Asian post-crisis regression on the government debt variable, it has a statistically positive effect at a = 0.05 on the consumption rate in ASEAN 6 countries. The coefficient value of the government debt consumption variable is 0.048354. This confirms that every USD 1 increase in government debt increases the household consumption variable of USD 0.048354. Furthermore, the post-global crisis regression results on government variables have a statistically negative effect at a = 0.05 on the consumption rate of ASEAN 6 countries. The coefficient value of the government debt variable is -0.000264; this confirms that every increase in the government debt variable of 1 USD decreases the household consumption variable of 0.000264 USD.

The estimates of the effect of government debt on household consumption show different results for the post-1998 Asian crisis and the post-2008 global crisis. The post-1998 Asian crisis estimates indicate that government debt positively affects household consumption. In contrast, the post-2008 global crisis estimates show that government debt has a negative effect on household consumption in the ASEAN 6 countries. This finding supports the results of research by Cassar et al. (2018) in Malta, which found that household consumption behavior did not follow the theory of the Ricardian Equivalence Hypothesis. The same results were also obtained in Pickson and Ofori-Abebrese's (2018) study in African countries, namely Botswana, Gambia, Ghana, Kenya, and Nigeria in 1981-2014, which found results that household consumption remained unchanged regardless of foreign debt.

The results of the same research were also carried out by Shamsi et al. (2016) in Pakistan, Belingher & Moroianu (2015)in Romania, Abada (2016) in Nigeria, Nosakhare (2019) in Nigeria and (Ayunasta et al., 2020) in after the 2008 Asian crisis, the results of the Indonesian state found that foreign debt influenced household consumption. It can be concluded that the estimation results after the Asian crisis in 6 ASEAN countries obtained results that align with the Keynesians' views. The Keynesian theory argues that fiscal policy to finance more spending will affect public consumption.

Unlike the post-global crisis estimation results, these results support Mosikari & Eita's (2017) in the country of Lesotho, finding that an increase in foreign debt will reduce household consumption per capita. According to the results obtained by Marzouk and Oukhallou (2017) in Morocco found that the government's debt policy did not affect public consumption. Research conducted by Ayunasta et al. (2020) in Indonesia found that after the global crisis in 2008, foreign debt did not affect consumption. When viewed from the post-global crisis estimation results, the effect of government debt variables on household consumption follows the validity of the theory of the Ricardian Equivalence Hypothesis presented by Barro (1974).

4. CONCLUSION

Based on a series of empirical tests regarding the applicability of the Ricardian Equivalence Hypothesis in six ASEAN countries after the 1998 Asian crisis and the 2008 global crisis, using variables such as government debt, gross domestic product (GDP), government spending, and tax revenues on household consumption, several conclusions can be drawn.

The post-Asian crisis regression estimation results show that GDP, government spending, and government debt statistically significantly affect household consumption in the six ASEAN countries, while tax revenue does not. This indicates that most fiscal policies in the post-Asian crisis affected household consumption, rejecting the Ricardian Equivalence Hypothesis and supporting Keynesian theory. Specifically, government debt in the post-Asian crisis period positively affected household consumption, reinforcing the acceptance of Keynesian economics over Ricardian equivalence.

In contrast, the post-global crisis regression estimation results reveal that only GDP statistically affects household consumption in the six ASEAN countries. Government spending, tax revenue, and debt do not significantly impact household consumption during this period. This supports the Ricardian Equivalence Hypothesis, suggesting that fiscal policies did not significantly impact household consumption after the global crisis, thus rejecting Keynesian theory.

Furthermore, government debt does not significantly affect household consumption post-global crisis, further supporting the enactment of the Ricardian Equivalence Hypothesis and the rejection of Keynesian economics in the economies of these six ASEAN countries during this period.

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