
Impact of Government Consumption on Household Consumption in Sri Lanka

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Abstract

Government consumption expenditure can either have a positive or a negative impact on household consumption expenditure. When both variables are positively related, they are complements, but if they are negatively related they are substitutes. Government may choose to increase aggregate demand in order to stimulate economic growth, so, it becomes important to know if increasing government consumption is the right channel to achieve this. This study examined the impact of general government final consumption on household consumption in Sri Lanka. Real per capita income and gross capital formation were among the explanatory variables. Using annual data from 1961 – 2018, an ARDL model was estimated. Results showed that the variables had no long run equilibrium relationship, as they were not co-integrated. Government consumption expenditure was not statistically significant in the explanation of changes in household consumption. Rather, Gross capital formation was significant in the explanation of changes in household consumption. Meanwhile a 1% increase in per capita income leads to a 1.37% increase in household consumption on average, while all other factors are held constant. Granger causality test result showed that there is a unidirectional causality from gross capital formation to household consumption, but there is no evidence of causality between government consumption and household consumption. These findings have the following policy implications: household consumption has very high income elasticity, so, in order to raise aggregate demand, Sri Lankan government should raise per capita income. Also, priority should be given to government investment and capital expenditure, as this will create an atmosphere for the private sector to thrive and boost income and economic growth.

Keywords: Government consumption, Granger causality, Gross domestic product, Household consumption

1. Introduction

Whenever governments across the world are faced with a downturn or recession in economic activities, such governments are always concerned about how best to move the economy out of the recession and get it back on the track of steady economic growth. For example, coronavirus (COVID-19) that broke out in December, 2019, has brought all economies of the world to a standstill. Not only has it claimed the lives of thousands of people, but it has also brought income loss to households, private businesses, corporate organisations and governments. When this pandemic is over, government must adopt policies capable of reviving the economy. To do this, government may decide to increase spending. Government spending is of two types, government consumption and government investment. An increase in government spending is assumed to lead to a corresponding increase in household consumption and aggregate demand. However, there is a debate on a possible degree of substitutability between government consumption and household consumption.

Sri Lanka, is a South Asian country, which is classified as an upper-middle income country (World Bank, 2019). The country is one of the emerging and developing countries of the region with an annual average growth rate of 4.16% in the past five years (2015-2019), and a modest inflation rate of 2.1% in 2018 (Central Bank of Sri Lanka, 2019). All has not been rosy for the island nation as she witnessed an ethnic internal conflict which lasted for thirty years and only ended in 2009. Despite that, the World Bank and the International Monetary Fund believe that Sri Lanka is yet to reach its full economic growth potential.

When government consumption increases, it could either lead to a corresponding increase in private household consumption or a decrease. In the case of the former, it means both expenditures are complements, while in the case of the latter, it means both expenditures are substitutes. Knowing the kind of relationship that exists between government final consumption and private household consumption is important for a government in the formulation of appropriate policies. For example, if government wishes to stimulate economic growth through an increase in aggregate demand of the private household, it can be achieved if both government consumption and private household consumption are complements.

Since the outbreak of coronavirus (COVID-19), many lives have been lost, businesses and economic activities have been brought to a halt, daily income earners are helpless, private and government consumption has declined. The Sri Lankan economy and the world at large has lost millions of dollars in income due to the virus. Once this pandemic is over, the government must identify the best ways of reviving the economy and putting it back on the track of sustainable and rapid growth. Government can only make informed decisions if they know the kind of relationship that exists between private household consumption and

government consumption, hence, the need for this study. The main objective of this study is to identify the impact of government consumption on private household consumption. In addition to that, the study tries to establish the direction of causality between the two. The rest of this study is as follows: Section 2 presents a brief review of the literature, Section 3 talks about the methods used, while Results and discussion are in Section 4. The conclusion is given in Section 5.

2. Literature Review

2.1. Theoretical Framework

According to the Keynesian school of economic thought, government intervention is required for economic growth. They believe that with government spending, the income of the household rises, and this in turn leads to an increase in aggregate effective demand. With an increase in aggregate effective demand comes an increase in the production of goods and services, which ultimately leads to economic growth. This was the postulate of Keynes and his followers. This line of reasoning emerged after the Great depression occurred, and the postulates of the Classical Economists broke down.

Prior to the Keynesian school of thought, we had the Classical school of economic thought. According to the Classicalists, there was no need for government intervention in the economy. They advocated the concept of market forces of demand and supply. They believed that whenever the market and economy are in disequilibrium, the market forces of demand and supply would restore equilibrium through price. They were the ones who introduced the self-adjusting mechanism, otherwise known as the invisible hand, asserting that the economy would always sort itself out without government intervention. However, it was the Great depression experienced in the 1930's that punctured their postulates as the economy did not self-adjust. It required government intervention in the form of government spending. This study adopts Keynes theory for the theoretical framework of this study. Other macroeconomic variables known to influence household consumption expenditure include the per capita income, disposable income, gross capital formation (also known as investment), inflation rate, interest rate and exchange rate.

2.2. Empirical Studies

In this section, we take a look at some of the empirical studies carried out on the relationship between government consumption and household consumption. Keho (2019) examined the impact of government spending on private consumption for the Economic Community of West African States (ECOWAS). He used the Common Correlated Effect Mean Group

estimator for the panel data analysis. His findings showed that government spending has a negative effect on private consumption. Dawood and Francois (2018) also investigated the elasticity of substitution between private consumption and government consumption for a panel of 24 African countries. They made use of the panel co-integration technique in their analysis. Their results also showed that both private and government consumption are substitutes. Kripornsak (2010) received a similar result for Thailand. Other studies which have reported similar results include D'Alessandro (2010), Khalid, Fei, Muhammad and Badar (2015), Onodje (2009), Tagkalakis (2008), Blanchard and Perotti (2002), Nieh and Ho (2006), Gali, Lopez-Salido and Valles (2007) and Chen, Luan and Huang (2014)

On the other hand, Khan, Fei, Kamal and Ashraf (2015) found evidence of government spending having a positive impact on private consumption in China. The study employed the ARDL method for estimation. What this means is that government spending complements private consumption in China, hence the former could be used to boost aggregate demand. Similar results were found in Malaysia by Ismail (2010), as Government spending was found not to have any crowding out effect on private consumption. Other studies which have similar results include Auteri and Costantini (2010) and Ho (2001).

3. Methods

In this section, we explain the analytical framework, the data transformation process and the source of data. The baseline model is given in equation 1.

$$\text{LnHC}_t = \alpha + \beta_1 \text{LnGC}_t + \beta_2 \text{LnGDPT}_t + \beta_3 \text{LnGCF}_t + \beta_4 \text{CPI}_t + \beta_5 \text{EXR}_t + \beta_6 \text{INT}_t + \mu_t$$

.....Equation (1)

Where LnHC is the logarithm of real per capita private household consumption expenditure, (at constant 2010 US\$)

LnGC is the logarithm of real general government consumption expenditure (at constant 2010 US\$)

LnGDP is the logarithm of real per capita income (at constant 2010 US\$)

CPI is inflation rate

LnGCF is the logarithm of real gross capital formation (at constant 2010 US\$)

EXR is the real exchange rate to one US dollar.

INT is the average weighted prime lending rate

μ_t stands for the error term, which is assumed to follow a normal distribution. The natural logarithm of some of the variables was used in order to measure the degree of elasticity between the variables and for the ease of interpretation. Annual data from 1961 – 2018 was obtained from the World Bank’s World Development Indicators (2019) and the Annual Report of Central bank of Sri Lanka for various years.

The methods to used include the Augmented Dickey-Fuller (ADF), the Phillips-Perron unit root tests, and the ARDL-Bounds co-integration tests. Depending on the results of the Bounds co-integration test, if there is presence of co-integration, we will proceed to estimate an Error correction model (ECM). In the absence of co-integration, we estimate only the ARDL model. Diagnostic tests shall also be carried out to establish the overall goodness of fit, serial correlation, heteroskedasticity and stability of the model. Granger causality test will also be carried out to determine causality and the direction of causality. To do this we make use of the Granger causality Wald test. The null hypothesis is that there is no granger causality.

4. Results and Discussion

The first step in analyzing the data is to carry out unit root test to identify whether the variables are stationary or not. We make use of the Augmented Dickey-Fuller (ADF) and the Phillips-Perron Unit root tests. The result of the unit root tests, presented in table 1, revealed that after taking the first differences of the variables, Household consumption expenditure (LnHC), General government consumption expenditure (LnGC), per capita income (LnGDP), Gross capital formation (LnGCF), Exchange rate (EXR) and Interest rate (INT), they all were stationary, meaning that they are all integrated of order 1, I(1). The only variable that was at stationary level was Inflation rate (CPI), meaning it is integrated of order 0, I(0).

Next, the Bounds test of co-integration was carried out in order to determine whether the variables have a long run equilibrium relationship. Results showed that there was no co-integration among the variables. Due to this, only an ARDL model was estimated, without an Error correction model. Table 2 shows the results of the estimated ARDL model. The optimal lag length was selected based on the AIC criterion. The ARDL (p, q₁, q₂, q₃, q₄, q₅, q₆) model estimated is given in equation (2) where p and q’s are the optimal lags selected using the AIC criterion.

$$\Delta \text{LnHC}_t = \alpha_{0i} + \sum_{i=1}^p \alpha_{1i} \Delta \text{LnHC}_{t-i} + \sum_{i=1}^q \alpha_{2i} \Delta \text{LnGDP}_{t-i} + \sum_{i=1}^q \alpha_{3i} \Delta \text{EXR}_{t-i} + \sum_{i=1}^q \alpha_{4i} \Delta \text{LnGC}_{t-i} + \sum_{i=1}^q \alpha_{5i} \Delta \text{CPI}_{t-i} + \sum_{i=1}^q \alpha_{6i} \Delta \text{LnGCF}_{t-i} + \sum_{i=1}^q \alpha_{7i} \Delta \text{INT}_{t-i} + e_t \dots\dots\dots \text{Equation (2)}$$

Table 1: Result of Unit Root Test

Level	ADF statistic			PP statistic	
	Intercept	Intercept and trend	Intercept	Intercept and trend	Order of integration
LnHC	0.758186	-5.338454***	0.858663	-2.740384	--
LnGC	0.432196	-1.622043	0.247843	-1.956517	--
LnGDP	1.944704	-1.805497	2.865810	-1.712328	--
CPI	-4.447018***	-4.381158***	-4.447018***	-4.381158***	I(0)
EXR	-0.844426	-4.662966***	-0.837167	-4.130222***	--
LnGCF	-0.604810	-2.148948	-0.225139	-2.314446	--
INT	-3.069692**	-2.975804	-2.607817*	-2.483276	--
First difference					
LnHC	-3.294075**	-3.318926	-7.771363***	-7.979494***	I(1)
LnGC	-10.80712***	-10.82121***	-10.80469***	-11.00472***	I(1)
LnGDP	-5.020586***	-5.679787***	-4.959422***	-5.595754***	I(1)
EXR	-9.094475***	-9.008128***	-9.126845***	-9.038953***	I(1)
LnGCF	-5.112907***	-5.068404***	-10.54678***	-10.46016***	I(1)
INT	-5.983060***	-6.083705***	-8.616668***	-14.96195***	I(1)

Source: Author's computation. Note: P-values *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$: means rejection of the null hypothesis of a unit root at the 1%, 5%, and 10% level respectively. All variables become stationary after taking their first difference except CPI which is stationary at levels.

Table 2: Result of the estimated ARDL (1, 1, 0, 0, 1, 1, 0) model

Dependent variable: LnHC		
Explanatory variables	Coefficients	Standard errors
LnHC _{t-1}	0.750***	0.070
LnGDP _t	1.368***	0.323
LnGDP _{t-1}	-0.776**	0.384
EXR _t	0.031*	0.017
LnGC _t	-0.059	0.076
CPI _t	-0.00015	0.0015
CPI _{t-1}	0.0034**	0.0014
LnGCF _t	-0.124***	0.044
LnGCF _{t-1}	0.152***	0.049
INT _t	-0.0022	0.0022
Constant	-0.223	1.243
No. of observations	57	
R-squared	0.53	
F test	1199.13	Prob>F = 0.0000
Durbin Watson	2.2	
Breusch-Godfrey LM test	1.721	Prob>chi2 = 0.1896
White Heteroskedasticity test	57.00	Prob>chi2 = 0.4377

Source: Author's computation. Notes: P-values *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$: means variable is statistically significant at the 1%, 5%, and 10% level respectively.

The study estimated an ARDL model to establish the relationship between general government final consumption and household consumption. The explained variable was the private household consumption (LnHC), while the explanatory variables were the lag of the explained variable, general government final consumption (LnGC), per capita income (LnGDP) and its lag, gross capital formation (LnGFC) and its lag, exchange rate (EXR), inflation rate (CPI) and its lag, and interest rate (INT). The lag of private household consumption had a coefficient of 0.75. It was positive and statistically significant at a 1% significance level. This shows persistence in household consumption. A 1% increase in the previous year's household consumption will lead to an increase in the current year's consumption by 0.75% on average, while all other factors are held constant. General government final consumption expenditure had a negative relationship with private household consumption, although it was statistically insignificant. The interpretation of this is that government consumption expenditure is not a major determinant of household consumption expenditure in Sri Lanka.

Per capita Income and its lag were both statistically significant at 1% and 5% significance levels respectively. A 1% increase in per capita income in the current year will lead to a 1.37% increase in private household consumption, while other factors are constant. This means that private household consumption is highly elastic to changes in income in the current year. However, the lag of per capita income has a negative relationship with household consumption expenditure in the current year. If the previous year's income rose by 1%, it would lead to a fall in household consumption expenditure by 0.78% in the current year. A possible reason for this is that the consumers may have decided to save or invest a part of their income.

Gross capital formation, also known as investments, has a major impact on private household consumption in Sri Lanka. An increase in gross capital formation in the current year leads to a decline in household consumption expenditure in the current year. However, a rise in the gross capital formation in the previous year leads to a rise in private consumption in the current year. The interpretation of this is that consumers begin to reap the dividends of the previous year's investments only in the current year. Gross capital formation had a negative coefficient of 0.12, while its lag had a positive coefficient of 0.15. Both coefficients were statistically significant at 1% significance level. A 1% increase in the current year's gross capital formation would lead to a 0.12% decline in private consumption expenditure, but a 1%

increase in the previous year's gross capital formation leads to a 0.15% rise in private consumption.

Looking at the relationship between inflation rate and the household consumption, it was observed that there is a negative relationship between them, although inflation rate was not statistically significant in the explanation of changes in the household private consumption. Likewise, interest rate had a negative relationship with private consumption, but was statistically insignificant. Post-diagnostic test results were acceptable, as there was no evidence to suggest serial correlation or heteroskedasticity. Also the model was generally stable.

Granger causality test was also performed, and the result is presented in table 3. Results of the Granger causality test indicates a unidirectional causality between inflation (CPI) and household consumption (LnHC), between gross capital formation (LnGCF) and household consumption (LnHC), and between interest rate (INT) and household consumption (LnHC). However, there was no evidence to show causality between government consumption (LnGC) and household consumption (LnHC). Unidirectional causality was also observed between per capita income (LnGDP) and government consumption (LnGC), and between gross capital formation (LnGCF) and government consumption (LnGC). Results showed evidence of bidirectional causality between gross capital formation (LnGCF) and per capita income (LnGDP) and between inflation rate (CPI) and real exchange rate (EXR).

Table 3: Granger Causality Wald tests

Variables	Chi2	Interpretation
CPI and LnHC	8.2237**	CPI granger causes LnHC
LnGCF and LnHC	7.7833**	LnGCF granger causes LnHC
INT and LnHC	8.8676**	INT granger causes LnHC
LnGCF and LnGDP	9.4492***	Ln GCF granger causes LnGDP and LnGDP granger causes LnGCF
INT and LnGDP	6.8178**	INT granger causes LnGDP
CPI and EXR	9.2436**	CPI granger causes EXR and EXR granger causes CPI
LnGDP and LnGC	14.93***	LnGDP granger causes LnGC
LnGCF and LnGC	13.661***	LnGCF granger causes LnGC
EXR and LnGCF	12.166***	EXR granger causes LnGCF
INT and LnGCF	9.4005***	INT granger causes LnGCF

Source: Author's computation. Note: P-values *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$: means rejection of the null hypothesis of no Granger causality at the 1%, 5%, and 10% level respectively. In order to save space, only the variables that have exhibited causality are reported in table 3.

5. Conclusion

Results showed that government consumption is not a significant variable in the explanation of changes in household consumption in Sri Lanka. There was persistence in household consumption, and this was reflected in the fact that the household's consumption in the previous year is a key determinant of the household consumption in the current year. Gross capital formation, also known as investment, turned out to be a significant determinant of household consumption expenditure. An increase in gross capital formation in the current year leads to a fall in consumption in the current year. However, increased gross capital formation in the previous year leads to a rise in household consumption in the current year. Meanwhile, per capita income, as expected, had a positive impact on household consumption, as there was high income elasticity observed.

The findings of this study have the following policy implications for government. Firstly, real per capita income is a strong determinant of household consumption, and as such government must implement policies capable of raising income (GDP). Secondly, Government investment expenditure, and, indeed, gross capital formation should be given a higher priority than government consumption expenditure, since it has a significant impact on household consumption expenditure. This will not only create a conducive and enabling environment for the private sector to develop, but it would also help to raise the income of the consumers, which in turn would raise aggregate demand. As Sri Lanka and the world battle to bring an end to the coronavirus outbreak and revive their respective economies, it is important that the government identifies the best channel through which government intervention should be made.

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