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THE IMPACT OF EXPENDITURES AND INVESTMENT ON ECONOMIC GROWTH IN VIETNAM

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Abstract

The article examines the long-term and short-term impacts of consumption expenditures and domestic investment on economic growth in Vietnam. The data used are time series from period of 1995 – 2022. The regression employs the Autoregressive Distributed Lag (ARDL) method. After conducting the boundary tests and error correction model, the variables in a long-term cointegration relationship were identified. Then, post-regression tests were performed to ensure the reliability of the regression results in the short and long term. The results reveal that government consumption expenditures has a positive impact only in the short term, but the rate of impact on growth is slower than that of household consumption spending and domestic investment. Meanwhile, household consumption and domestic investment have a positive impact on economic growth in both the short and long term.

Keywords: ARDL, Investment, Expenditures, Economic, Growth.

JEL Classification Code: H54; E22; D12; C54

1. INTRODUCTION

Economic growth is a goal pursued by the majority of countries to create material wealth for society, improve the standard of living, ensure national security, and aim for the sustainable development of the nation. Evaluating its resources and impacts in both the short and long term is of interest to many scholars worldwide, with various perspectives on the resources for economic growth. However, according to Jones (2008), the theory of Keynes consists of three pillars:

(i) The aggregate approach;

(ii) The decisive role of aggregate demand; and

(iii) The importance of future expectations of economic agents.

The main policy message of Keynes has requested the governments to implement flexible macroeconomic policies through expansionary or contractionary monetary and fiscal policies to stabilize the economy. Also according to Jones (2008), the macroeconomic thought of Keynes could be briefly summarized as follows: Total output, which is also the total income of the economy, is formed through the realization of spending decisions, namely:

(i) Household consumption expenditure;

(ii) Investment expenditure for business expansion;

(iii) Government spending; and

(iv) Net export of the domestic products to foreign economies.

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The behavior of spending in these four categories are various. Household consumption expenditure depends on expected income and household saving desire; Investment and business expansion expenditure belong to the business plans of firms, which in turn based on the firm's expectations in the future; Government spending depends on the needs, budget, and plans of the government; while net export spending stands on the condition of foreign countries and international trade conditions. Considering these four types of spending, the first two types heavily are formed on expectations about the future of the spending entities. That could be an important characteristic in theory of Keynes.

Considering the perspective above, within the scope of this research, the author aims to assess the impact on the total output of the economy through three components of aggregate demand: Household consumption expenditure, government consumption expenditure, and domestic investment. As the result, the author seeks to derive policy implications in planing scenarios for the goal of enhancing the expected economic growth of the Vietnamese government.

2. LITERATURE REVIEW

Through examining studies in this field, two opposing viewpoints have been demonstrated regarding the relationship between government spending and economic growth.

According to the findings of Romero and Strauch (2003), Schaltegger and Benno (2006), an inverse relationship between the level of government spending and economic growth has been found. These authors believed that increasing government spending leads to decreased economic growth and creates a crowding-out effect on private investment because when the government increases spending, it needs to raise taxes, which has a negative impact on the economy.

Similarly, Szarowska (2011) revealed an inverse relationship between total government expenditure and growth in the Czech Republic. Nuta et al. (2015) also indicated a negative relationship between government spending and economic growth in Romania based on data from the period 1990–2011.

On the other hand, the second group of economists identified a positive relationship between government spending (for consumption and transfers) and economic growth. They argued that increasing government spending would improve the investment environment (Magazzino, 2012; Mavrov, 2007). Further evidence comes from Szarowska (2012), affirmed a positive impact of government spending on growth in 8 countries in Central and Eastern Europe (CEE). These confirm Keynes' theory of stimulating the economy through government spending.

Muhammad et al. (2018) studied the impact of investment expenditure and household consumption on Indonesia's economic growth from 2003 to 2013. The autoregressive distributed lag (ARDL) model was employed to regress data. Research results shown that there are long-term and short-term effects of consumption spending on economic growth. Meanwhile, there is no clear evidence about the impact of investment on economic growth. The study also documents that the rise is 1.88% in economic growth if consumption spending increases by 1%.

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Radulescu et al. (2019) examined the economic growth achieved by CEE countries formed on whether consumption or investment by using LS estimates with fixed effects. The authors used annual data series over the period of 2004–2017 for eight selected countries. The results meaned that private consumption expenditure has a positive relationship in short-term with economic growth but public expenditure has the opposite.

There was the positive impact of domestic investment on economic growth in the CEE region but weaker than the impact of both private and public spending. The study also concluded that economic growth in the CEE region are mainly based on short-term private consumption, but private consumption did not support job creation in the long or short term.

Similarly, numerous papers have highlighted the role of domestic investment in economic growth in developing or underdeveloped countries. Akanbi (2010) observed that domestic investment creates more employment opportunities compared to foreign direct investment. Montek (2002) found a causal relationship between domestic investment and economic growth in India and Italy.

Choe (2003) and Qin et al. (2006) demonstrated a causal relationship between economic growth and domestic investment in 80 countries worldwide and China, respectively. Furthermore, Tang et al. (2008) investigated the causal relationship between foreign direct investment, domestic investment, and economic growth in China, revealing a positive correlation between domestic investment and economic growth and identifying a bidirectional causal relationship between them.

Roman and Padureanu (2012) analyzed the relationship of domestic investment, FDI and economic growth using the Cobb–Douglas function and demonstrated a positive relationship. Verhorn and Vasarevici (2011) expressed that FDI and domestic investment as well as prudent fiscal and monetary policies were important determinants of economic growth in Central and Eastern European countries.

Shabbir (2021) investigated the causal relationship between domestic and foreign private investment and their impact on economic growth in Pakistan. The paper used time series data from 1980 to 2017 through the ARDL method.

The study found that in the long term, foreign investment has a non-significant negative impact on economic growth, whereas domestic investment has a statistically significant and positive effect on the Pakistani economy. Short-term dynamics confirmed that both domestic and foreign private investment have significant and positive relationships with the growth rate.

Nguyen Van Bon (2020) conducted a study on the impact of government spending on economic growth in 6 provinces in the Southeast region of Vietnam from 2005 to 2018 by the Generalized Method of Moments (GMM) estimation.

The estimation results stated that government spending reduce economic growth in those regions. However, population and infrastructure were found to promote economic growth. These findings suggested some important policy implications related to government spending and economic growth for the Southeast region of Vietnam.

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Hoang Vu Hiep, Ngo Quoc Dung (2016) aimed to evaluate the overall long-term and short-term impact of capital factors, including domestic and foreign capital flows, on economic growth of Vietnam. The article employed a quantitative approach by the autoregressive distributed lagged (ARDL), using data in the period of 1995 - 2015.

Research results noted that Official Development Assistance capital flow has a negative impact on economic growth in both the short and long term. Meanwhile, foreign direct investment and domestic capital flows have a positive impact. Especially, as the main driving factor affecting growth, domestic investment capital flow has indicated the strongest impact. Besides, the impact of foreign direct investment capital flow on growth was increasingly decreasing.

Through the above surveys, many researches have been verified in different spaces and times. As the results, there have been many conflicting conclusions about the factors affecting economic growth. The purpose of this study is oriented to contribute an more empirical evidence for the case of Vietnam about the long-term and short-term impacts of expenditures and investment on economic growth.

3. DATA AND METHODOLOGY

3.1. Data

The paper utilized secondary data from the Asian Development Bank and the World Bank. Table 1 specifies the acronyms, measurement unit and data sources of the variables.

Table 1: Description of Variables

Acronyms	Description	Sources	Period
GDP	Ratio % growth rate of gross domestic product.	https://aric.adb.org/macroindicators	1995-2022
HFC	Ratio % of household final expenditure on GDP.	https://databank.worldbank.org/source/world-development-indicators#	
GGC	Ratio % of final government expenditure on GDP.	https://databank.worldbank.org/source/world-development-indicators#	
GCF	Ratio % of domestic investment on GDP.	https://databank.worldbank.org/source/world-development-indicators#	

Source: Author's compilation

In the research sample, GDP growth from 1995 to 2022 ranges around 6.7%. Due to the impact of the Covid epidemic, the year of 2020 had the worst growth value, about 2.56%, the maximum growth was 9.54%. P-value of Jarque-Bera was more than 5%, so the measurement of variables meet the standard of normal distribution for this study. Table 2 states the statistical indicators describing the variables.

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Table 2: Summary Descriptive Statistics of Variables

	GDP	HFC	GGC	GCF
Mean	6.778214	63.07054	8.190786	32.36071
Median	6.917500	64.96600	8.269500	32.06350
Maximum	9.540000	74.44100	10.91600	39.56600
Minimum	2.562000	54.93700	5.465000	27.14400
Std. Dev.	1.627058	6.292852	1.941422	3.107064
Jarque-Bera	4.071247	2.364721	3.013216	0.689374
Probability	0.130599	0.306554	0.221661	0.708442
Observations	28	28	28	28

Source: Own processing from Eviews.

Based on table 3, the independent variables of HFC and the dependent variable of GDP have a positive correlation. The variables of GGC and GCF are negatively correlated with GDP. This proves that the impacts of the independent variables on the dependent variable are balanced. In addition, Table 3 also notes that the independent variables have a weak correlation. According to Mukaka (2012), applying empirical rules about the strength of the relationship between pairs of variables, the majority of independent variables in the model have an average correlation with each other because they are less than 0.70. That means the multicollinearity is limited, suitable for the conditions of running the estimation model.

Table 3: Correlation Coefficient of Variables

	GCF	GDP	GGC	HFC
GCF	1.00000	-0.00579	-0.33094	-0.13378
GDP	-0.00579	1.00000	-0.27238	0.44154
GGC	-0.33094	-0.27238	1.00000	-0.60801
HFC	-0.13378	0.44154	-0.60801	1.00000

Source: Own processing from Eviews.

3.2. Methodology

Research Models

The research are inherited from two studies of Muhammad et al. (2018) and Radulescu et al. (2019) to implement the model for this study as detailed below:

$$GDP_t = \beta_0 + \beta_1 HFC_t + \beta_2 GGC_t + \beta_3 GCF_t + \varepsilon_t \quad (1)$$

Where GDP is the dependent variable, representing economic growth. The variables of HFC, GGC, GCF are independent variables, ε is the random error in the model. The variables are described in detail in table 1.

Regression Model and Diagnostic Tests

The research employs the cointegration technique (ARDL), proposed by Pesaran, Shin & Smith (1996), developed by Pesaran et al. (2001) and Im et al. (2003). The ARDL model is an unconstrained dynamic model in which the dependent variable is expressed as a function of the

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lagged variable of the dependent variable itself and other independent variables. When researching macro variables such as GDP, many authors have performed this method.

The ARDL method approaches from general to specific, has many advantages in that the model avoids the problem of integration order, suitable for both large and small samples, does not constrain variables in the same lag, providing unbiased estimates even when some explanatory variables are endogenous (Adom et al., 2018). Besides, the bound test in ARDL estimates the long-run equilibrium relationship through a dynamic error correction model. As the result of that, the calibrated ARDL parameters provide more accurate short-term and long-term estimation coefficients and adjustment speeds.

The ARDL quantitative analysis procedure are conducted in the following order: Firstly, determining the lags of the variables in the ARDL model by the information criterias of LR, FPE, AIC, SC and HQ. Secondly, checking the stationarity of the variables by Correlogram Analysis, ensuring the variables are not stationary at the same level but no stationarity of I(2); Thirdly, testing to confirm cointegration between variables by two tests: Bound test and ECM (Error Correction Model). These imply that the paper consideres whether or not a long-run relationship between variables by the evaluation of F-Bound Test number. If the value of F-Bound is higher than value at I (1) and I (0), the long-term relationship could be determined. In addition, the ECM will be applied as following model:

$$DGDP_t = \beta_0 + \sum_{i=>1} \beta_1 DGDP_{t-i} + \sum_i \beta_2 DHFC_{t-i} + \sum_i \beta_3 DGGC_{t-i} + \sum_i \beta_4 DGCF_{t-i} + \psi ECM_{t-i} + \varepsilon_{2t} \quad (2)$$

$$Where: ECM_{t-1} = GDP_t - (\lambda_2 HFC_{t-1} + \lambda_2 GGC_{t-1} + \lambda_3 GCF_{t-1}) + \varepsilon_{3t} \quad (3)$$

ECM is an error correction model. The value ψ gives the adjustment level to the long-term equilibrium when deviating from the equilibrium. If the parameter ψ of the ECM has a negative value and is statistically significant, the dependent variable GDP has a self-adjustment mechanism to return to its equilibrium value, if it deviates from the long-term equilibrium.

Fourthly, estimating the ARDL model with determined lags to state the long-term and short-term relationships between variables by error correction model (ECM) based on the method of Engle and Granger (1987) as follow:

$$DGDP_t = \beta_0 + \sum_{i=>1} \beta_1 DGDP_{t-i} + \sum_i \beta_2 DHFC_{t-i} + \sum_i \beta_3 DGGC_{t-i} + \sum_i \beta_4 DGCF_{t-i} + \lambda_1 GDP_{t-1} + \lambda_2 HFC_{t-1} + \lambda_3 GGC_{t-1} + \lambda_4 GCF_{t-1} + \varepsilon_{it} \quad (4)$$

Where, the long-term impact assessment model specified:

$$GDP_t = \beta_0 + \lambda_1 GDP_{t-1} + \lambda_2 HFC_{t-1} + \lambda_3 GGC_{t-1} + \lambda_4 GCF_{t-1} + \varepsilon_{1t} \quad (5)$$

And the short-term impact assessment model by:

$$DGDP_t = \beta_0 + \sum_{i=>1} \beta_1 DGDP_{t-i} + \sum_i \beta_2 DHFC_{t-i} + \sum_i \beta_3 DGGC_{t-i} + \sum_i \beta_4 DGCF_{t-i} + \varepsilon_{2t} \quad (6)$$

Finally, the study will conduct post-regression tests including Wald test, Normality test, Breusch-Godfrey Serial Correlation LM Test, Breusch-Pagan-Godfrey, Ramsey Reset Test.

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4. EMPIRICAL FINDINGS

4.1. Appropriate Latency Selection

Table 4 points out the results of selecting the optimal lag according to 5 different criterias. Eview software has helped indicating the optimal lags in each standard by marking with an asterisk (*). This study selects the lag of variables based on the result that matches the most criterias. Accordingly, the standards of FPE, AIC, SC and HQ together yield a maximum number of lag variables of 4. Thus, the lag of 4 is selected to run the ARDL regression model.

Table 4: The Appropriate Latency for Variables in the Model

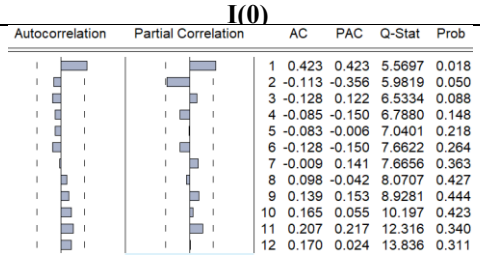
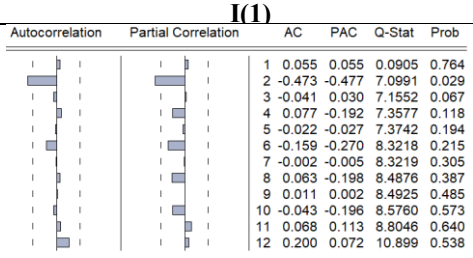
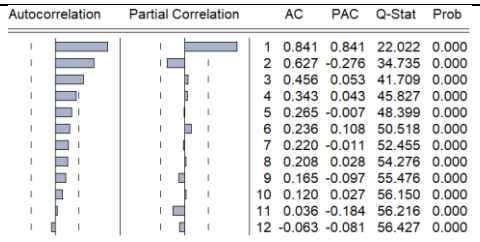
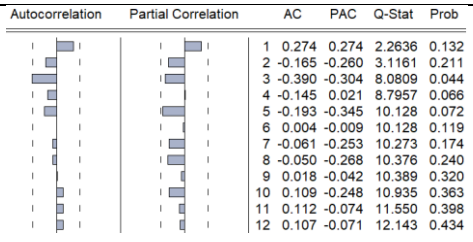
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-201.0200	NA	309.1055	17.08500	17.28134	17.13709
1	-151.5640	78.30529*	19.49685	14.29700	15.27871	14.55745
2	-133.0069	23.19632	17.92566	14.08391	15.85099	14.55272
3	-105.5364	25.18136	9.927214	13.12803	15.68048	13.80520
4	-66.84480	22.57008	3.631114*	11.23707*	14.57489*	12.12259*

Source: Own processing from E OPviews.

4.2. Results of Unit Root Test

The stationarity of variables are determined by using the Correlogram Analysis method. Table 5 documents that GDP variables is sationary at level I (0). While other variables are at I (1). By these characteristic of the variables, it is guaranteed that the regression model using the ARDL method is appropriate.

Table 5: Determination of Stationarity of Variables

Variable	I(0)	I(1)
GDP		
HFC		

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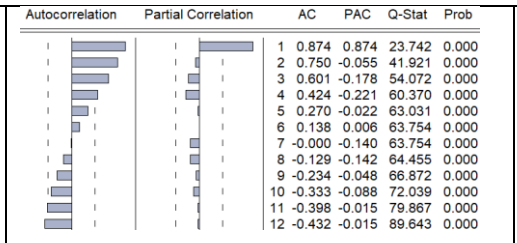
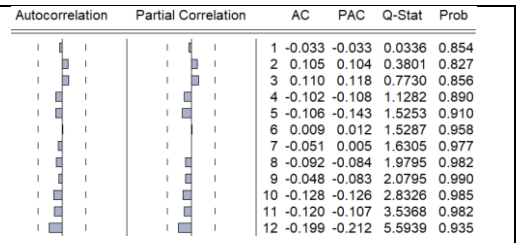
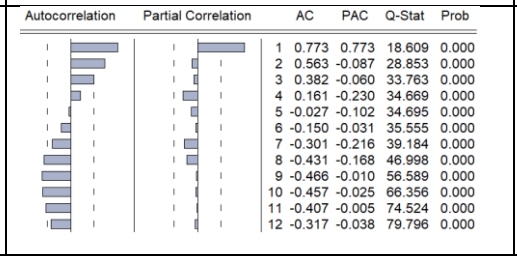
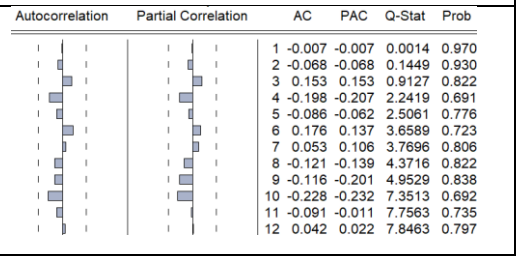
GGC





GCF





Source: Own processing from Eviews.

4.3. ARDL Model Regressions and Diagnostic Tests

4.3.1. The Test of Cointegration

After determining the optimal lag of 4 and checking the stationarity of the variables, the study performed a bound test with the aim of examining the long-term relationship between economic growth (GDP) and independent variables (HFC, GGC, GCF). Table 6 gives the bound test results.

Table 6: Boundary Test Results

F-Bounds Test		**Null Hypothesis: No levels relationship**		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	2.792474	10%	2.72	3.77
k	3	5%	3.23	4.35
		2.5%	3.69	4.89
		1%	4.29	5.61

Source: Own processing from Eviews.

The results from table 6 express that the calculated F statistic value is 2.792. Comparing with the value of the lower and upper boundaries at the 10% significance level, the F statistical value is within the limits of the two curves. However, at the 1%, 2.5% and 5% levels, the hypothesis of the existence of a long-term relationship between the variables in the model could be rejected.

From the results of the bound test, there is no highly convincing evidence of the existence of a long-term relationship. Therefore, the next step is to estimate the model of error correction (model 2) to consider the ECM adjustment coefficient. If the coefficient is negative and statistically significant, the conclusion is that the cointegrated long-term relationship exists, then continue to analyze the short-term and long-term impacts of the model.

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Table 7: Regression Results of ECM Coefficient and Short-term Relationship in the Model

ARDL Error Correction Regression				
Selected Model: ARDL(4, 4, 4, 4)				
Included observations: 24				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-22.09339	5.633239	-3.921970	0.0172
D(GDP(-1))	1.529317	0.378334	4.042243	0.0156
D(GDP(-2))	0.371834	0.397847	0.934617	0.4029
D(GDP(-3))	1.227625	0.444906	2.759290	0.0509
D(HFC)	1.025534	0.278086	-3.687830	0.0211
D(HFC(-1))	0.791549	0.219030	-3.613885	0.0225
D(HFC(-2))	-0.118275	0.183655	0.644003	0.5546
D(HFC(-3))	0.372114	0.174435	2.133261	0.0998
D(GGC)	-2.350464	0.654295	-3.592363	0.4229
D(GGC(-1))	-2.685502	0.785335	-3.419564	0.5268
D(GGC(-2))	1.278789	0.518937	2.464248	0.0694
D(GGC(-3))	2.209727	0.578622	3.818948	0.0188
D(GCF)	0.956227	0.200772	4.762741	0.0089
D(GCF(-1))	0.475011	0.224014	2.120453	0.1013
D(GCF(-2))	0.025701	0.238491	0.107766	0.9194
D(GCF(-3))	-1.139650	0.343549	-3.317285	0.2295
CointEq(-1)*	-1.695690	0.443065	-3.827181	0.0187
R-squared	0.913284	Mean dependent var		0.093917
Adjusted R-squared	0.715076	S.D. dependent var		1.693194
S.E. of regression	0.903798	Akaike info criterion		2.820101
Sum squared resid	5.717956	Schwarz criterion		3.654556
Log likelihood	-16.84122	Hannan-Quinn criter.		3.041482
F-statistic	4.607701	Durbin-Watson stat		2.949926
Prob(F-statistic)	0.024047			

Source: Own processing from Eviews.

The estimating of ECM in table 7 indicates that the coefficient of CointEq (-1) is -1.695690 with P-value = 0.0187 < 5%. Thus, the doubt of non-existence in long-term cointegrated relationship between economic growth and independent variables in the model can be rejected. The next step is to test the long-term model.

Table 8: Long-run Coefficient Regression Results

Independent variable: GDP				
Variables	***Coefficient***	***Std. Error***	***t-Statistic***	***Prob.***
HFC	0.074427	0.223559	0.332919	0.0359
GGC	-0.086821	0.765777	-0.113376	0.9152
GCF	0.470593	0.297400	1.582355	0.0187

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Source: Own processing from Eviews.

4.3.2. Post-regression Tests

The Wald test results in Table 9, the P-Value are more than 5%, meaning that the coefficients of the variables in the short-term model are not simultaneously equal to 0, it confirms that the independent variables are all considered meaningful in the model of short term form.

Table 9: Wald Test

Variables	Test Statistic	Value	Probability
HFC	F-statistic	1.978142	0.2625
	Chi-square	7.912569	0.0948
	Giả thuyết H_0 : C(5)=C(6)=C(7)=C(8)=0		
GGC	F-statistic	1.658277	0.3181
	Chi-square	6.633106	0.1566
	Giả thuyết H_0 : C(9)=C(10)=C(11)=C(12)=0		
GCF	F-statistic	1.253738	0.4159
	Chi-square	5.014953	0.2858
	Giả thuyết H_0 : C(13)=C(14)=C(15)=C(16)=0		

Source: Own processing from Eviews.

Table 10: Diagnostic Testing

No	Test	P-Value	Conclusion
1	Normality test	0.4904	The residual has a normal distribution
2	Breusch-Godfrey LM Test	0.3922	There is no autocorrelation
3	Breusch-Pagan-Godfrey	0.3393	The error variance does not change
4	Ramsey Reset Test	0.4222	Correct format model

Source: Own processing from Eviews.

5. CONCLUSION

Table 8 manifests the empirical results of the long-term relationship as below:

$$GDP = 0.0744*HFC - 0.0868*GGC + 0.4705*GCF + \varepsilon_t$$

The estimation results document that independent variables such as HFC and GCF could explain fluctuation of GDP at the 1% significance level. Furthermore, these estimated coefficients are positive, suggesting that household spending and domestic investment increase economic growth in the long run.

However, the HFC coefficient is smaller than GCF, proving that in the long run, domestic investment has a stronger impact than household spending in contributing to growth. Government spending has a negative coefficient, which means it has a negative impact on economic growth but is not statistically significant, so it is not possible to conclude the impact of government expenditure on economic growth in the long-term.

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The short-term regression results in table 7 intimate that the independent variables all have an impact on economic growth but at different times and with different levels of statistical significance. By inertia, economic growth of the year will has a positive impact on economic growth in the following years. The regression result of the ECM index of -1.695690 with significance level of 0.0187 < 5%, demonstrating that the speed of adjustment from short-term to long-term equilibrium between GDP and independent variables are very strong after when there are policy shocks. The results also reveal that the ECM short-term impact model explained 91.3% of the short-term fluctuations of GDP affected by independent variables during the research period.

The estimated coefficient are statistically significant with P-value < 5% that could be applied to analyze the short-term impact on GDP including variables such as: D(HFC); D(HFC(-1)); D(GGC(-3)); D(GCF) and all impacting positively on GDP. Thus, in the short term, household and government spending and have a positive influence on economic growth. But government expenditure affect on growth by the third year. Importantly, domestic investment has an immediately beneficial impact on economic growth.

In conclusion, household spending has a positive impact on economic growth in both the short and long term. This result is consistent with the study of Muhammad et al. (2018). Likewise, domestic investment also has a positive short-term and long-term impact on GDP, similar to the results of Shabbir (2021). Meanwhile, government expenditure only has a positive impact in the short term, suitable to the article by Nguyen Van Bon (2020), but the speed of impact on growth is later than household and domestic investment.

6. POLICY IMPLICATIONS

As the above research results, the article implies to propose the following policy orientation:

The government should consider that domestic investment is an important resource for both short-term and long-term growth of the economy. By the level of investment impact, this study proves that there are still a lot of opportunities for economic growth based on investment in Vietnam. The requirement of policies to actively attract domestic investment must be implemented to increase investment in Oder to create a process of growth and sustainable development in the future.

The consumption of household is a driving force for increasing production and expanding investment, thereby contributing to the increase GDP. Therefore, the consumption stimulus policy needs to be maintained and expanded more channels and fields in Vietnam in the current and upcoming periods.

In particular, the Vietnamese government needs to strengthen measures by fiscal policy and monetary policy to control the current inflation problem, especially after the Covid pandemic, as well as political instability in the world. That increasingly impact on the general price level of the economy to cause high inflation in the near future and negatively affect spending and domestic investment.

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