Real Estate Price, and Government Budget on Economic Growth: the Case of Vietnam in the Context of Global Supply Value Chain

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Abstract: In the context of global supply chain value, it has greatly contributed the trade volumes, government budget utility and promotion for economic growth. Vietnam has been as one of the fastest growing economies in Asian Pacific and the world with a robust 7 percent since economic reforms in 1986 till present. At the same time, the real estate market has been as an enabler of economic activity by improving housing demands and enhancing economic performance. In particular, the real estate market has also been opened up for foreigners since 2015, who can buy or invest on a property in the country. This paper focuses on exploring the dynamic relationship between real estate price, government budget and economic growth in the case of an emerging economy. Using a quarterly data covering in the period of Q1/2008 to Q4/2018 with approximately 44 observations and applying Autoregressive Distribution Lagged (ARDL) approach, results reveal that, in both short run and long run, economic growth is highly affected by fluctuations of present, and past economic growth. In addition, there exists a long run relationship between government budget and economic growth. Regarding real estate price and its impact on economic growth, this study could not find any findings in this relationship in the both short and long run. The recommendations indicate that the trends of global supply value chains can strongly support for economic growth in the long run.

Key words: ARDL model, real estate price, budget, Unit root tests

1. Introduction

In recent years, value chains have further expanded in the quantity and quality by supporting a strong relationship between economies in the global. Businesses around the world have increasingly expanded in pursuit of margin promotion. In addition, the volume of intermediate goods and services has significantly increased a triple and strongly supported for government budget, economic growth. As suggested in a study of Islam and Polonsky (2020), economic development in value chains is predominantly critical for developing and emerging countries as well as generates supplier businesses' performance, economic growth.

In the context of integration and economic development, real estate has been known as one of the most important sectors of the economy in the global in general and especially developing and emerging countries (Hong, 2014; Sinha & Mukherjee, 2020). In fact, real estate is an enabler of economic activity by improving housing demands, infrastructure development, and a sector of solving employment, job creation (Hong, 2014; Nguyen, 2012; Yan and Pan, 2020). Regarding contribution of real estate to the economy, approximately 11 percent GDP are contributed by real estate sector.

In the case of Vietnam, it is evident that Vietnam has been as one of the fastest growing economies in Asian Pacific and the world with a robust 7 percent since economic reforms in 1986 till present. According to General Statistics Office, in 2017 and 2018, Vietnam continued to improve her high growth at 7.08 percent, and 7.02 percent. Vietnam is expected to maintain its stellar growth in the upcoming years (Nguyen, 2019; Nguyen et al., 2020; Bui, 2020). Vietnam has also been a major supplier country in the global value chains for Samsung, Lotte, LG…

Real estate market in Vietnam has officially been opened up for foreigners since 2015. Specifically, a foreigner can buy or invest on a property in Vietnam. According to CBRE Vietnam, housing, and real estate price in Vietnam are considered very affordable compared to other places in the region such as Thailand, Singapore, and Malaysia. A profit yield of rental apartments in a hot location in major cities in Vietnam can be easily received of approximately 8 percent instead of about 2-2.5 percent in Thailand or Singapore. In addition, according to Vietnam government, who is investing of approximately $38 billion per year for infrastructure projects in transport, power, irrigation, water, and education, healthcare. This plan is as a plus factor for real estate market and its profit. In particular, cities as Hanoi, Ho Chi Minh City would be expected to be quickly developing with other economic hubs.

According to these analyses, the aim of this research is expected to examine the relationship between real estate price, and government budget on economic growth in the case of Vietnam in the context of global value chains. In this research, we will analyze according to the advanced method using the Autoregressive Distributed Lagged (ARDL) Model. The data will cover in the period from 1994 to 2010.

The remainder of this research will be followed as: Section 2 depicts the literature review. Data collection and Methodology will be present in Section 3 while Section 4 is for results and discussion. Section 5 will conclude.

2. Literature review

Islam and Polonsky (2020) in a study regarding economic development in value chains, it is predominantly critical for developing and emerging countries, and it generates supplier businesses' performance, economic growth. Using data from 350 senior executives in Bangladesh, Islam and Polonsky (2020) suggest that supplier's businesses capability could be critical to four types of upgrading such as reliability, discriminant validity, convergent, and nomological validity.

As shown by Cebula (1995) using a sample data in the United States of America by conducting instrumental variables and quarterly data covering in the period of 1955-1992, Cebula (1995) suggested the budget deficits exist in the federal level in US over this period. An interesting evidence is shown that government budget deficits can reduce economic growth rate over time. Further, Kim et al. (2018) using a panel smooth transition regression method to analyze a sample of developed, and developing economies, Kim et al. (2018) indicate that government size can positively promote productivity and output growth in the economy through the mechanism of good government. In contrast, government size can harm output growth above threshold level of government size. Further, Gu et al. (2020) indicate that global value chains do not

support for manufacturing industry green growth in the case of China, and this effect is really not optimistic.

According to Gonzalez-Eiras and Niepelt (2012) on a study in advanced economies of OECD to analyze the short, and long term effects of government spending components on economic growth. Using OLG approach, growth is considered by capital accumulation and productivity rises supported by public spending, results indicate that economic growth in politico economic equilibrium may be significantly unchanged because of a tradeoff of social security exchanges and the mechanism of crowing out of public spending. Abbas et al. (2020) further indicate in the case of China by using GVAR model. In which, China has a target of undervaluation in order to support her trading with other trading partners. This policy is therefore supporting for exports, and reducing imports for Chinese economy in the both short and long run.

As suggested in Hong (2014) on a study in 284 cities in China in the period from 1994 to 2010 by using the dynamic analysis according to GMM method. The relationship between real estate investment and income has been focused. A greater investment in real estate has positively contributed a greater economic growth in the short term, and negative impact for the long term. Hong (2014) further suggests that Chinese government should decrease government expenditure and change its policies tending to new trends in economic development in order to boost a greater economic performance. In addition, Yang and Pan (2020) indicate that housing price has a negative long-run impact on economic growth in the case of China according to a study on 32 provinces in the between 1999 and 2005 in China. Therefore, Yang and Pan (2020) suggest that housing policy in China may not be effective in less developed provinces and it could lead the misallocation of government relation to fiscal policy.

3. Methodology and Data Descriptions

3.1. Data Descriptions

In order to explore the effects between real estate, government budget on economic growth in the context of global value chains nowadays, the study strives to investigate the causal relationship of real estate price and State budget collection on economic growth with an evidence from Vietnam by employing a quarterly series data spanning from 2008 to 2018 using the Autoregressive Distributed Lagged (ARDL) Model. Three studied variables were collected from the General Statistics Office (GSO) of Vietnam and CB Richard Ellis Vietnam which include: Gross Domestic Product (compared to 2010 price in billion VND), State budget collection (compared to 2010 price in billion VND) and Grade A office rental (USD/meter square/month). For stability of time series, logarithm of rations is considered in the form of:

$$rGDP_t = \ln\frac{GDP_t}{GDP_{t-1}}; \qquad rSBC = \ln\frac{SBC_t}{SBC_{t-1}}; \qquad r\mathrm{RES}_t = \ln\frac{\mathrm{RES}_t}{\mathrm{RES}_{t-1}} \tag{1}$$

Table 1: Original variable Measurements in the Study

Dependent Variables	**Abbreviation**	**Source**
Gross Domestic Product (billion VND)	GDP	GSO
Independent Variables		
Government budget (billion VND)	SBC	GSO
Real estate (USD/meter square/month)	RES	CBRE

Source: Summarized by the author

3.2. Methodology

Influence of real estate price and government budget collection on economic growth has not been investigated in a wide range of empirical studies all around the world. Based on theoretical consideration, it is recommended some models for time series could be variance decomposition analysis, VECM Granger causality approach and robustness of causality analysis, Granger causality, co-integration test, unit root test and the ARDL bounds testing approach, etc. In this study, we will investigate time series thanks to ARDL model. This model was introduced by Pesaran, Shin & Smith (1996). The equation of the ARDL model considered in the study is as follows:

$$D(rGDP)_t = \alpha_0 + \sum_{i=1}^{m} \alpha_i D\left(GDP\right)_{t-i} + \sum_{i=1}^{n} \beta_i D\left(SBC\right)_{t-i} + \sum_{i=1}^{n} \gamma_i D\left(RES\right)_{t-i} + u_t \quad (2)$$

where D is the difference operator; $\alpha_i, \beta_i, \gamma_i$ are the regression coefficients, and u_t is the residual. The residual has a simultaneous correlation but has not correlation with its lags and every independent variable. So there are both lags of independent and dependent variables on the right side of the regression equation (3.2).

The ARDL model estimation procedure includes the following steps: Firstly, the stationarity of the time series $rGDP_t$, $rSBC_t$, $rRES_t$ are verified. Secondly, the optimal lag for the ARDL model is selected thanks to Hannan-Quinn criteria. Based on this choice, optimal ARDL model is estimated. Thirdly, the optimal ARDL model estimation is back tested:

+ Ramsey RESET test is carried out to test whether the model is well specified or not;

+ Cumulative sum of residuals (CUSUM: Cumulative Sum of Recursive Residuals) and Cumulative sum of square of residuals are implemented for stability test of ARDL model.

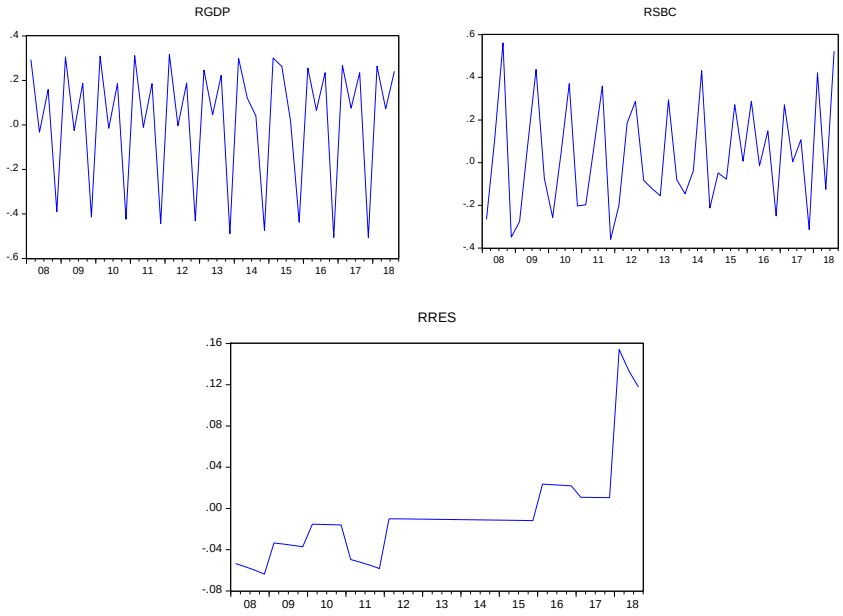
+ Lagrange Multiplier test (abbreviated as LM test) is for autocorrelation of ARDL model.

If the final estimated ARDL model is acceptable, then the ARDL model can be used to describe the impact of the real estate price and State budget collection on economic growth in the short term. For long-term relationship among real estate price and State budget collection on economic growth, Bound Test is involved. One can find Chapter 17 of Gujarati (2004) for details of the ARDL model.

4. Empirical results

4.1. Stationarity of Variables

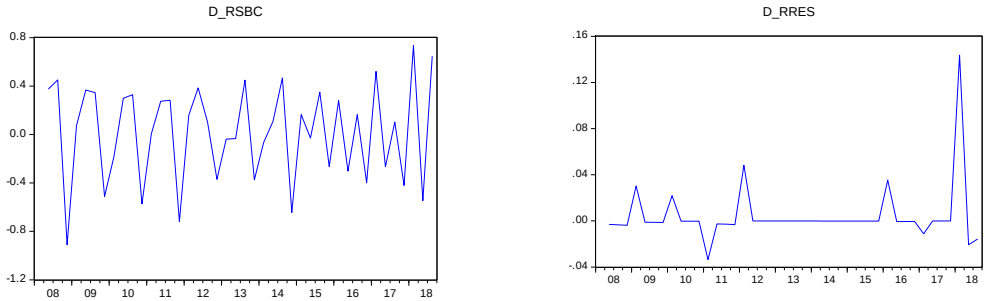
A stationary time series is significant to a regression analysis based on the time series, since non-stationary time series cannot preserve useful information or characteristics. Hence, a non-stationary time series would lead to a spurious regression. However, in practice, most economic time series are non-stationary. Therefore, time series should be transform to be stationary after differencing or logarithm algorithm, etc. Important characteristics or information can still be preserved in the time series after differencing. Let us recall that, a time series is said to be stationary if its mean and variance are constant and, the co-variances depend on upon the distance of two time periods. At first step, we may have a look at the graph of data in level in Figure 1.



Source: Drew by the author

Figure 1 – Graph of data at level

Figure 1 initially suggests that the time series $rRES_t$ are not stationary, while $rGDP_t$ is stationary and may be $rSBC_t$ is stationary. We make a try to the graphs of the first difference of the above variables in Figure 2.



Source: Drew by the author

Figure 2 – Graph of data at first difference

Figure 2 shows that the first difference series $rSBC_t$, $rRES_t$ are stationary. It consolidates that difference is indeed a good method to obtain stationary time series. The unit root test is used to test the station of variables and the order of integration. The Augmented Dicky-Fuller unit root test (ADF) is often used in this case. The result of ADF test is presented with lag 4 suggested by Newey-West, including trend and intercept in test equation. Table 2 and 3, respectively, present ADF tests for time series at level and at the first difference.

Table 2 – ADF test results for time series at level at 5% significance

Null Hypothesis	t-Statistic	Prob.	Conclusion
$rGDP_t$ has a unit root	-5,092042	0.0010	Station
$rSBC_t$ has a unit root	-3.389210	0.0679	Non-station
$rRES_t$ has a unit root	-1.239053	0.8876	Non-station

Source: Result from the analysis

Table 3 – ADF test results for data at first difference at 5% significance

Null Hypothesis	t-Statistic	Prob.	Conclusion
D(rSBCt) has a unit root	-4.983062	0.0014	Station
D(rRESt) has a unit root	-4.46048	0.0488	Station

Source: Result from the analysis

The unit root test with first difference and the results shows that $rGDP_t$ is stationary at level and the other two data series stationary at the first difference at 5% significance level. Figures 1 and 2 support this. For convenience, first difference of all variables are taken into model. There are at least two advantages if first difference data series are used to explain the interaction of variables. Firstly, it introduces more on the decrease or increase trend rather than the actual fluctuation. Since the first difference data series is the decrease or increase between every two consecutive dates, a weakening or strengthening of the trend will be detected by the impulse response function. Secondly, it captures more information on the shocks of variables, because the first difference data shows the changes in the past two periods while the level data shows the changes in one period

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4.2. Descriptive Statistics

Table 4: Descriptive Statistics

Items	RGDP	RSBC	RRES
Mean	0.025897	0.033577	-0.006690
Median	0.121567	-0.014913	-0.011173
Maximum	0.316899	0.561379	0.154151

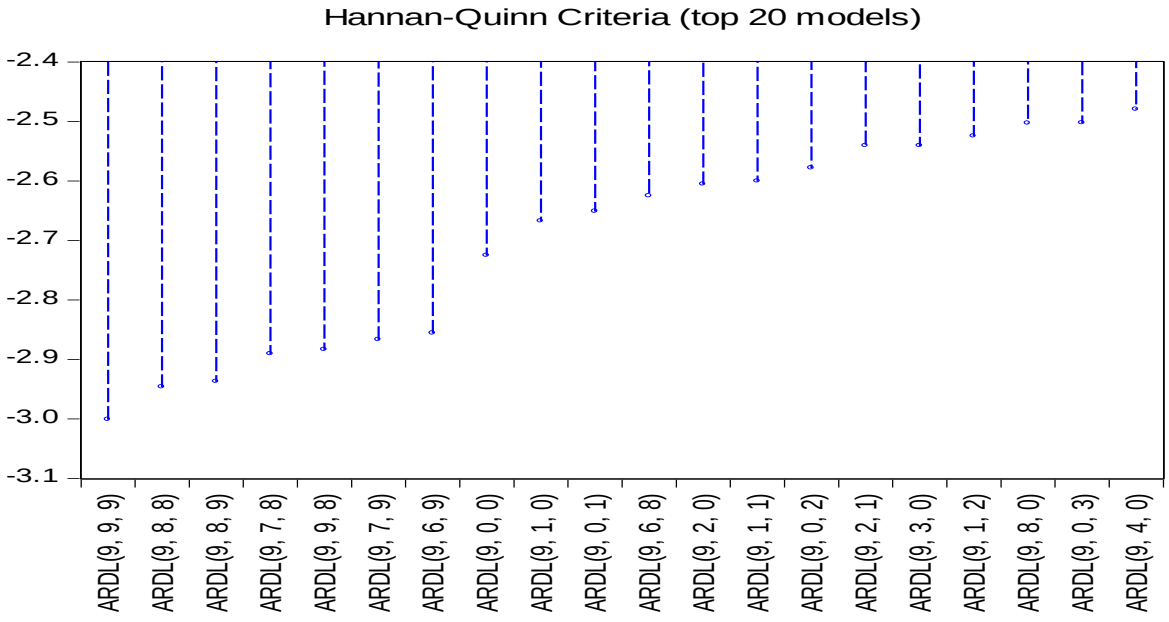
Minimum	-0.506617	-0.359186	-0.063716
Std. Dev.	0.285916	0.255871	0.046096
Skewness	-0.861852	0.380669	1.939580
Kurtosis	2.217461	2.049846	7.298460
Jarque-Bera	6.420478	2.656016	60.06497
Probability	0.040347	0.265005	0.000000
Sum	1.113554	1.443821	-0.287682
Sum Sq. Dev.	3.433412	2.749733	0.089242
Observations	43	43	43

Source: Result from the analysis

Table 4 presents data description including 43 observations of each variable after transformation (3.1) for situation of Vietnam over quarter to quarter from 2008 to 2018.

4.3. Discussion of Estimation Models

First of all, Hannan-Quin information criterion value is used to offer the most appropriate model. The traditional way to select the optimal lag is to estimate the ARDL model multiple times with descending lags down to 0. Among the estimated ARDL models, the one with smallest Hannan-Quin information criterion value is selected. In this study, the top 9 lags and selects the recommended model according to Hannan-Quin criterion. The image depicting Hannan-Quin's criterion value for the best 20 models, including the best model. Thanks to this Hannan-Quin information criterion, the best ARDL selected is that ARDL (9,9,9).



Source: Result from the analysis

Figure 3: Hann-Quin's Criteria for the 20 Best Models

4.4. Results of Econometric Modeling

ARDL (9,9,9) is estimated as in the following Table 5.

Table 5: Results of ARDL (9,9,9) model estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(RGDP(-1))	-2.118908	0.302173	-7.012228	0.0060
D(RGDP(-2))	-3.720382	0.757537	-4.911156	0.0162
D(RGDP(-3))	-5.749842	1.361247	-4.223951	0.0243
D(RGDP(-4))	-7.261684	2.030341	-3.576584	0.0374
D(RGDP(-5))	-8.592019	2.617294	-3.282788	0.0463
D(RGDP(-6))	-8.934405	2.792669	-3.199236	0.0494
D(RGDP(-7))	-7.000580	2.287329	-3.060591	0.0550
D(RGDP(-8))	-4.495160	1.621512	-2.772203	0.0694
D(RGDP(-9))	-1.913033	0.750139	-2.550237	0.0839
D(RSBC)	0.095986	0.186452	0.514804	0.6422
D(RSBC(-1))	0.468376	0.350734	1.335418	0.2740
D(RSBC(-2))	0.857927	0.498056	1.722550	0.1834
D(RSBC(-3))	1.307339	0.640942	2.039717	0.1341
D(RSBC(-4))	1.090883	0.553889	1.969499	0.1435
D(RSBC(-5))	0.898154	0.536953	1.672686	0.1930
D(RSBC(-6))	0.312396	0.343756	0.908771	0.4305
D(RSBC(-7))	-0.176856	0.371874	-0.475581	0.6669
D(RSBC(-8))	0.017564	0.251594	0.069810	0.9487
D(RSBC(-9))	-0.204484	0.305312	-0.669753	0.5510
D(RRES)	1.833524	1.294618	1.416266	0.2517
D(RRES(-1))	-0.952834	1.001117	-0.951770	0.4114
D(RRES(-2))	-0.201947	0.940821	-0.214650	0.8438
D(RRES(-3))	3.304160	2.144327	1.540884	0.2210
D(RRES(-4))	1.554572	2.137384	0.727325	0.5196
D(RRES(-5))	-0.679091	2.188890	-0.310244	0.7767
D(RRES(-6))	-0.639437	1.747448	-0.365926	0.7387
D(RRES(-7))	4.678747	2.759273	1.695645	0.1885
D(RRES(-8))	4.594627	2.081911	2.206928	0.1144
D(RRES(-9))	1.655369	2.069576	0.799859	0.4823
C	-0.030589	0.018432	-1.659615	0.1956
LM test for the residual of the ARDL model F-statistic = 10.87383 Prob. F(1,2) = 0.0810				

Source: Result from the analysis

a. Autocorrelation test

Thanks to the Breusch-Godfrey Serial Correlation LM Test, we consider the test issue:

- The Null hypothesis H_0: no first order autocorrelation
- The Alternative hypothesis H_a: existence of an autocorrelation

According to the results in Table 5, the p-value of the F-statistic is larger than 0.05 so that null hypothesis is not rejected at 5% significance level. In other words, there is no autocorrelation between variables in the model ARDL (9,9,9).

b. Model specification Test

To test for model specification of ARDL (9,9,9), the Ramsey Reset test is carried out. In a result, Table 6 indicates that the test results with p-values are all over 0.05, which proved that the model is well specified.

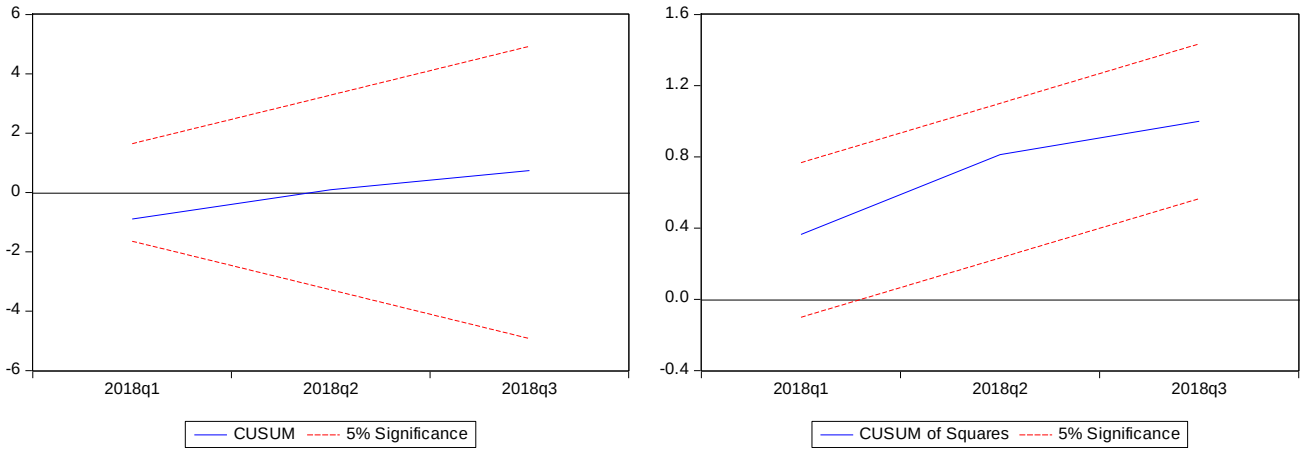
Table 6: Model specification Test

Items	Value	df	Probability
t-statistic	1.635765	2	0.135
F-statistic	1.49032	(1, 2)	0.235

Source: Result from the analysis

c. Stability test

The last back testing is about the stability of ARDL (9,9,9) model thanks to the cumulative sum of residuals. If the cumulative sum of the residuals is within the standard range at the 5% significance level, then it can be concluded that the residual of the model is stable and therefore the model is stable.



Source: Result from the analysis

Figure 4: The cumulative sum of recursive residuals of the ARDL model at a 5% significance level

To go further to investigate the long-run relationship among the above considered variables, we use co-integration test thanks to Bound test.

Table 7: Test of long-run relationship between the variables

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	5.168516	2
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	3.17	4.14
5%	3.79	4.85

Source: Result from the analysis

According to Table 7, the test statistic value is larger than every critical Value Bounds at significance levels of 10% and 5%. Therefore, there exists a long run relationship among real estate price and State budget collection on economic growth. That long-run from is presented in Table 8.

Table 8: Long-run relationship among the variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1), 2)	47.667104	13.566185	3.513671	0.0391
D(RGDP(-2), 2)	43.946723	12.938087	3.396694	0.0426
D(RGDP(-3), 2)	38.196881	11.722311	3.258477	0.0472
D(RGDP(-4), 2)	30.935197	9.849082	3.140922	0.0516
D(RGDP(-5), 2)	22.343178	7.339259	3.044337	0.0557
D(RGDP(-6), 2)	13.408773	4.602504	2.913365	0.0618
D(RGDP(-7), 2)	6.408193	2.356375	2.719513	0.0726
D(RGDP(-8), 2)	1.913033	0.750139	2.550237	0.0839
D(RSBC, 2)	0.095986	0.186452	0.514804	0.6422
D(RSBC(-1), 2)	-0.857927	0.498056	-1.722550	0.1834
D(RSBC(-2), 2)	-1.307339	0.640942	-2.039717	0.1341
D(RSBC(-3), 2)	-1.090883	0.553889	-1.969499	0.1435
D(RSBC(-4), 2)	-0.898154	0.536953	-1.672686	0.1930
D(RSBC(-5), 2)	-0.312396	0.343756	-0.908771	0.4305
D(RSBC(-6), 2)	0.176856	0.371874	0.475581	0.6669
D(RSBC(-7), 2)	-0.017564	0.251594	-0.069810	0.9487
D(RSBC(-8), 2)	0.204484	0.305312	0.669753	0.5510
D(RRES, 2)	1.833524	1.294618	1.416266	0.2517
D(RRES(-1), 2)	0.201947	0.940821	0.214650	0.8438
D(RRES(-2), 2)	-3.304160	2.144327	-1.540884	0.2210
D(RRES(-3), 2)	-1.554572	2.137384	-0.727325	0.5196
D(RRES(-4), 2)	0.679091	2.188890	0.310244	0.7767
D(RRES(-5), 2)	0.639437	1.747448	0.365926	0.7387
D(RRES(-6), 2)	-4.678747	2.759273	-1.695645	0.1885
D(RRES(-7), 2)	-4.594627	2.081911	-2.206928	0.1144
D(RRES(-8), 2)	-1.655369	2.069576	-0.799859	0.4823
CointEq(-1)	-0.786013	13.744967	-3.694881	0.0344
Cointeq = D(RGDP) - (0.0919*D(RSBC) + 0.2983*D(RRES) -0.0006)				
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RSBC)	0.091901	0.043575	2.109038	0.1255
D(RRES)	0.298265	0.101447	2.940120	0.0605*
C	-0.000602	0.000296	-2.031770	0.1351

Source: Result from the analysis

In the co-integration test, the co-integration regression coefficient is negative (-0.786013) and is statistically significant at 5% (with very small probability value of nearly zero) indicating that co-integration relationship exists between variables. That is, in the long term when the system is in equilibrium, when

a shock occurs, the variables in the model tend to move, "pull" the whole system "back" to the equilibrium, which means a reverse movement tendency (the negative sign of the co-integration regression coefficients) compared to those fluctuations. The co-integration equation, or equation that represents the long-run equilibrium relationship among the variables is as follows:

$$D(RGDP_t) = 0.091901*D(RSBC_t) + 0.298265*D(RRES_t) – 0.000602 + u_t \quad (3)$$

5. Discussion the Results

5.1. Short-run relationship

According to Figure 3, the estimation of the ARDL (9,9,9) is finally selected as the best model to discuss. Regarding the estimation results, our analysis shows the relationship of real estate price and government budget collection on economic growth – in the case of Vietnam in the trends of global supply value chains, we have the result in short run in the following Table 9.

Table 9: Short-run impacts of the variables on economic growth

Variable	Regression Coefficient	Prob.*
D(RGDP(-1))	-2.118908	0.0060***
D(RGDP(-2))	-3.720382	0.0162**
D(RGDP(-3))	-5.749842	0.0243**
D(RGDP(-4))	-7.261684	0.0374**
D(RGDP(-5))	-8.592019	0.0463**
D(RGDP(-6))	-8.934405	0.0494**
D(RGDP(-7))	-7.000580	0.0550*
D(RGDP(-8))	-4.495160	0.0694*
D(RGDP(-9))	-1.913033	0.0839*
D(RSBC)	0.095986	0.6422
D(RSBC(-1))	0.468376	0.2740
D(RSBC(-2))	0.857927	0.1834
D(RSBC(-3))	1.307339	0.1341
D(RSBC(-4))	1.090883	0.1435
D(RSBC(-5))	0.898154	0.1930
D(RSBC(-6))	0.312396	0.4305
D(RSBC(-7))	-0.176856	0.6669
D(RSBC(-8))	0.017564	0.9487
D(RSBC(-9))	-0.204484	0.5510
D(RRES)	1.833524	0.2517
D(RRES(-1))	-0.952834	0.4114
D(RRES(-2))	-0.201947	0.8438
D(RRES(-3))	3.304160	0.2210
D(RRES(-4))	1.554572	0.5196
D(RRES(-5))	-0.679091	0.7767
D(RRES(-6))	-0.639437	0.7387

D(RRES(-7))	4.678747	0.1885
D(RRES(-8))	4.594627	0.1144
D(RRES(-9))	1.655369	0.4823
C	-0.030589	0.1956

Note: the number in ( ) is the probability value of test of estimated coefficients' significance.

, **, and * indicate significance level of 10%, 5% and 1%*

Source: Result from the analysis

In the short run, we cannot find any findings regarding how real estate price, and government budget affect economic growth. It is explained that in the short run, changes in real estate, and government budget cannot immediately impact on economic growth.

5.2. Long-run relationship

The long-run equilibrium relationship among the variables is as in equation (4.1), in which, a 10 billion VND increase in state budget collection will increase GDP in average by 0.9 billion VND, while a 1 USD/meter square/month increase grade A office rental will increase GDP in average by 0.298 billion VND in the long-run. At the same time, state budget collection may increase the GDP, but insignificant. This finding is not consistent with Yang and Pan (2020) in the case of China. In addition, Hong (2014) further discussed on Chinese economy and suggests that decrease in government expenditure and change its policies tend to build new trends in economic development in order to boost a greater economic performance. Therefore, the trends of global supply value chains can strongly support for economic growth in the long run.

6. Conclusion

In the context of global supply chain value, it has greatly contributed the trade volumes, government budget utility and promotion for economic growth. This paper investigates the impact of real estate price and government budget collection on economic growth of Vietnam between 2008 and 2018. The empirical reveals that in the short run, there is no a directional relationship running from real estate price as well as government budget collection to economic growth, but existence a strong impact of economic growth in the previous years on the next year. Results even show that there is a co-integration among variables in the long run, with positive impact of both real estate price and government budget collection on economic growth. In long run, economic growth in the previous years has impact on economic growth in the current year, but no impact for real estate price and government budget.

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