

Effectiveness analysis for Japanese ODA impact on growth: Empirical results from Laos

Soulivanh Chansombuth

Graduate School of Economics, Ritsumeikan University,

Japan

csulyvanb@gmail.com

ORCID 0000-0003-3499-0957

Abstract. Official development assistance (ODA) has shown strong results in economic development in many least-developed countries. It strengthens growth along with FDI and private investments. However, the significance of ODA depends on the host country and donors. The effectiveness of ODA in Laos has not yet been examined. This investigation deeply explores the relationship between Japanese ODA and the economic growth in Laos by using variables such as ODA funds, industrial investment, and exports of Laos in association with growth effectiveness. In the analysis, the data on ODA from Japan was used as a key factor for the growth in Laos – it is a vital component of this study. The analysis was conducted for 30 years of data (1990-2020) and utilized a vector error correction model with a unit root test and Johansen approach. In the long run, the ODA, as the main independent variable, had a positive effect on growth and industrial investment in Laos, but exports exhibited a negative effect on growth. Furthermore, in the short term, there was no sign of a positive relationship between ODA from Japan and the growth of Laos; exports also had a negative relationship to growth. Conversely, the variable of industrial investment had a positive effect on growth in the short term. However, the empirical results demonstrated growth effectiveness from the involvement of Japanese ODA funds in Laos in the long run.

Received:

November, 2022

1st Revision:

August, 2023

Accepted:

September, 2023

DOI:

10.14254/2071-8330.2023/16-3/6

Keywords: Growth effectiveness, long run, short run, vector error correction model.

JEL Classification: C32, O1, R11

1. INTRODUCTION

Lao PDR has a long history of war and colonization reaching 150 years in the past. This hampered Laos and made for slow development until recent days while poverty remained across the nation. Official development assistance (ODA) plays an essential role in the development processes of Laos in terms of generating domestic growth. Many studies showed quite similar findings on aid being beneficial for countries' development. Consequently, the utilization of aid improved the effectiveness and stability of the state (Todaro & Smith, 2015). Least developed countries or LDCs have suffered from social and political

instability, unstable economic growth, and the poverty trap (United Nations, 2019). Although LDCs have received significant amounts of foreign aid for many decades, their developmental circumstances have not improved as much as predicted. Currently, most famous studies are substantially writing into issues and discussions on the effect of ODA on increasing stability in least-developed countries. Fundamentally, requesting assistance from LDCs to other developed countries has demonstrated a positive scenario on the sharing from developed to LDCs as to improving the situation of fragility and improving the socio-economic condition of LDC countries. However, foreign aid has been an instrument of foreign policy in Laos, promoting political and diplomatic relations with developed countries, and enhancing socio-economic stability among countries. One of the greatest difficulties in specifying the relationship between aid and economic development is that constant output growth and low money are likely to be stable. Some articles describe stability as a composite measure of social and economic effectiveness as well as the governance effectiveness of a country. Many literatures defined the effectiveness of ODA could be shown by a good degree of democracy in a country. Likewise, an economy plagued by frequent boom-bust cycles with high money value is considered unstable. Studies conducted by the Asian Development Bank (ADB) and the International Monetary Fund (IMF) revealed that effective government with benchmarks of good governance such as transparency, accountability, rule of law, and governance, can only drive the economy toward macroeconomic stability. The voluminous literature about the effects of aid on a recipient country has studied deeply the relationship between aid and economic growth, real exchange rates, exports, and imports; overall, it focused on fiscal, monetary, and trade policies. These studies had different outcomes, according to methodology, area, period, and the nature of donors. This study explored the effects of official development assistance on the economic growth of Laos, using the value of investment from the industrial sector and government effectiveness as proxies.

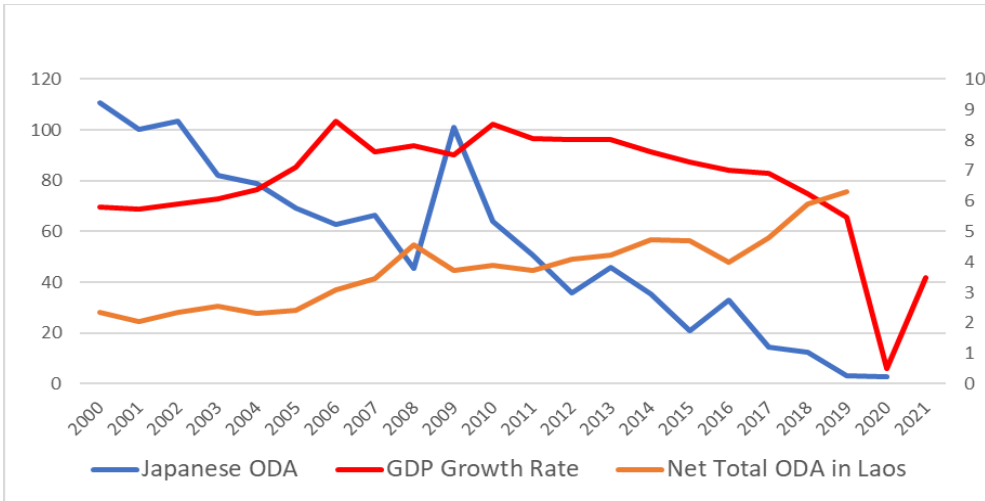


Figure 1. Trend of Japanese ODA, total ODA, and economic development in Laos

Source: Author based on Department of International Cooperation, Ministry of Planning and Investment, Lao PDR. Ministry of Foreign Affairs, Japan. World Bank Data, 2022.

While comparing Japanese ODA and economic development in Laos, Figure 1 shows that the trend of Japanese ODA in association with growth has been sharply reduced year by year, but the total ODA inflowed to Laos has been continuously increased.

However, the ODA in Laos plays an essential role in enhancing economic development. Many ODAs focus on enhancing knowledge and education. The Japanese ODA is one of the grants that concentrates on human development, thus there are many projects such as training and technical cooperation. In Laos,

laborers’ skills and knowledge are important for the young generation of Laos, power of Lao young generation can build the economy and growth, Figure 2 shows the trend movement of investment in the industry sector in association with the development of knowledge support from ODA, thus investments by young Lao people have been increasing, young generation tries to start up new investments and boost the economy of Laos. The NSEDP reported that investment in the industrial sector has been increasing continuously from 2010 until the period of the COVID-19 pandemic when the investment decreased.

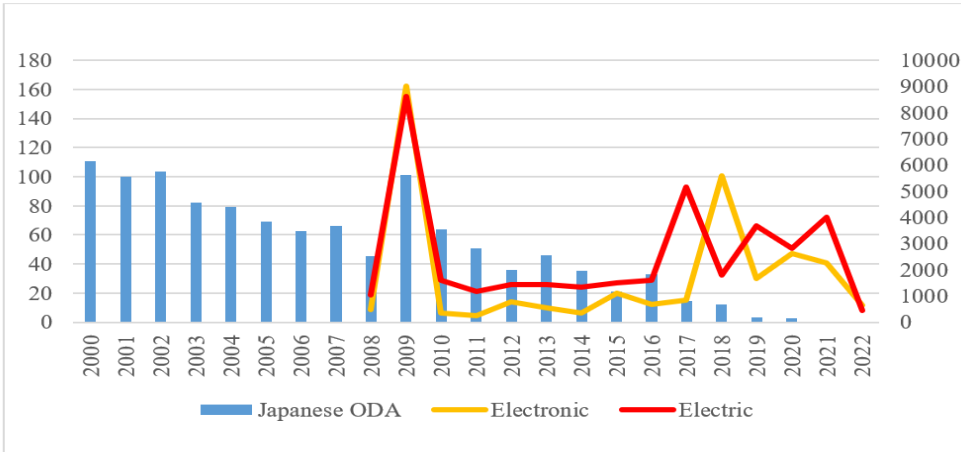


Figure 2. Industry investment and ODA funds from Japan 2000-2022

Source: National Enterprise Database, Ministry of Industry and Commerce, Lao PDR. Department of International Cooperation, Ministry of Planning and Investment, Laos. Ministry of Foreign Affairs, Japan.

Several methodologies are based on (Bhavan, 2013), and (Burnside & Dollar, 2000) explained that the estimated coefficient of the interaction term of aid is statistically significant and positive to ODA. Thus, the incentive policy of the recipient economy plays a crucial role in the effectiveness of ODA. This study has two objectives or two research questions, as given in the following:

- 1) Does Japanese official development assistance have a positive impact on the economic growth of Laos?
- 2) Are Japanese ODA, industrial investment, and exports effective in enhancing the economic growth of Laos?

2. LITERATURE REVIEW

2.1. Aid and growth effectiveness

ODA affects the effectiveness of growth, this is a vital discussion. There are two views of the impact: 1) For the positive impact, ODA can support the government to enhance the quality of growth, strengthen policy and planning capacity; and establish strong institutions such as in South Korea. Franco et al., (1998) investigated the relationship between aid and the public sector in Pakistan and found a slightly positive impact on public investment as well as a negative impact on tax efforts. Fundamentally, the assumption of a positive relationship between ODA and growth is that the high growth rate can improve government quality. 2) For the negative impact, aid may deteriorate the efficiency of government activities in the long run. As many donors prioritize their ODA in least-developed countries with different conditions, their engagement sometimes imposes a burden on the government and lowers the efficiency of economic

activities. Furthermore, some articles focused on a negative aid growth relationship, in which negative growth hampers revenue and government role. In academic institutions, there have been limited studies conducted. Djankov et al., (2008) investigated the effect of aid on democratic governance using data from 108 countries data for the period 1960-1999, and they found that aid has a negative effect on it. Some interesting studies evaluated the unintended effect of aid, using different dependent variables with qualitative and quantitative approaches, and pointed out the problem of endogeneity with multifaceted relations.

2.2. Impact of assistance in LDCs

(Thian and Evan, 2018) investigated the impact of aid on 95 developing countries by using panel data with a non-linearity assumption, and found a U-shaped relationship, that foreign aid has a negative impact on the countries' growth, and as time goes on, ODA positively contributes to economic growth. Similarly, (Easterly, 2003) found that foreign aid does not have any significant effect on growth, even if good policies are implemented in recipient countries. By contrast, (Ekanayake and Chatrna, 2010) investigated the effect of aid on economic growth and found three cases of negative effects out of four categorized periods. As the ODA impacted institutional quality and poverty eradication, Chong et al., (2009) examined the effect of aid on inequality and poverty from 1972 to 2002; they approached the question using two econometric techniques: first, with a cross-sectional analysis, and second with a panel data method to tackle potential endogeneity assume inequality and various measures of poverty on the interactive term between ODA and corruption, schooling, the share of agriculture and industry, and income per capita. Besides the previous studies, as mentioned in the previous chapter, this study focused on the ODA impacts the growth effectiveness in Laos.

OECD defines official development assistance as a fund provided to countries such as recipient countries, which donors of funds offer ODA for promoting economic development and improving the standard of living for people in recipient countries.

3. METHODOLOGY

3.1. Model specification

The author utilized a vector error correction model to check the relationship between ODA and economic development; the VECM and cointegration method are essential tools to find out the result as mentioned earlier in the research questions section; moreover, the study relied on time series data with non-stationary and used Johansen co-integration test, certainly, the VECM was applied in this analysis to understand the long-run relationship between economic growth 'GDP' and ODA. Let, the model be given below:

$$\Delta Y_t = \beta_0 + \sum_{i=1}^n \beta_i \Delta Y_{t-i} + \sum_{i=1}^n \delta_i \Delta X_{t-i} + \varphi ecm_{t-i} + \mu_t \quad (1)$$

Where ΔY_t is the GDP, $\Delta Y(t-i)$ is the lagged GDP, $\Delta X(t-i)$ is the lagged ODA, and other considerable variables in macroeconomics based on the literature of (Kawthar, 2017); ECM (t-i) is the lagged residual from cointegration between ODA, and GDP. The model derived from:

$$Y_t = \beta_0 + \beta_1 X_t + \varepsilon_t \quad (2)$$

Then,

$$\varepsilon_t = ecm_{t-i} = Y_{t-i} - \beta_0 - \beta_1 X_{t-i} \quad (3)$$

The growth effectiveness was treated as a main proxy of economic growth. In addition, conditional effects were used to examine the long and short-run effects, the author also relied on Burnside and Dollar (1998), who studied the impact of ODA and growth. Further derivation:

$$Y_{tn} = \beta_0 + \beta_t X_t + \gamma_t Z_t + \mu_t \quad (4)$$

Where Y is the growth rate of GDP per capita, X is a vector of explanatory variables, Z is a vector of control variables, μ is the error term, t refers to time, β_t and γ_t are parameters. In this study, the explanatory variable is official assistance per gross product (ODA), and others in the model are control variables such as industrial investment and export.

To address the issue of growth, it is meaning of GDP growth rate, the following specifications are examined with a VECM model, and variables determined by the author are given below:

Let, the final model.

$$\Delta GDP\ growth_t = \beta_0 + \sum_{i=1}^n \beta_i \Delta GDP\ growth_{t-i} + \sum_{i=1}^n \theta_i \Delta ODA_{t-i} + \sum_{i=1}^n \delta_i \Delta IID_{t-i} + \sum_{i=1}^n \omega_i \Delta EXP_{t-i} + \varphi ecm_{t-i} + \mu_t \quad (5)$$

Where “t” represents the year, t-i refers to the lag of each explanatory and controlled variable.

ODAJ: The official development assistance from Japan

IID: Value of investment in industry sector

EXP: Export of Laos

μ_t : Disturbance term.

Another point of the study, besides ODA, the author also focused on the effect of industrial investment and export in relation to the effective growth of Laos.

To interpret the effectiveness of growth by using the scales of coefficient is very important, if the coefficient is higher than 0.4 – 1, it means that there is effectiveness of the explanatory variables impact on the outcome variable. The rule of thumb in the survey research by Rea and Parker (1922) for the test of correlation coefficient has stipulated the scales of the correlation coefficient as shown below:

| | |
|-------------|---------------------|
| 0.00 < 0.10 | (Negligible) |
| 0.10 < 0.20 | (Weak) |
| 0.20 < 0.40 | (Moderate) |
| 0.40 < 0.60 | (Relatively strong) |
| 0.60 < 0.80 | (Strong) |
| 0.80 < 1.00 | (Very strong) |

The interpretation of the above scales for the growth effectiveness is that the author emphasizes if the coefficient of the explanatory variable is 0.40 or higher in the short run, then it means there is effectiveness of growth impacted by explanatory variables such as ODAJ, IID, and EXP in the VECM analysis.

3.2. Data

The data has been gathered from the (World Bank, 2022) from 1990 to 2020. The net amount of official development was collected from the Department of International Cooperation, the Ministry of

Planning and Investment in Laos, and governmental offices from the central level in Laos. Moreover, other data such as industrial investment and export were also collected from the Ministry of Industry and Commerce in Laos¹.

In addition to the unit root test of Dickey-Fuller, Johansen Cointegration, and VECM, this was a vital element for investigating the effect of long-run and short-run relationships between variables. Furthermore, using STATA is a necessary tool to analyze the results of ODA, investment, export, and economic development through the designated period.

4. EMPIRICAL RESULTS AND DISCUSSION

This paper examined the impact of ODA on the growth effectiveness of Laos by using the indicator ‘GDP growth’ and other variables such as ‘industrial investment’ in Laos and exports of Laos. The results of the study are shown in Table 1.

Table 1

ADF Unit Root Test for Non-Stationary Variables

| ADF Unit Root Test (T-test) | | | | | | | | |
|-----------------------------|-------------------|----------|----------|---------|------------------------------|----------|----------|---------|
| Variables | Level I (0), Sig. | | | P-value | First Difference I (1), Sig. | | | P-value |
| | 1% | 5% | 10% | | 1% | 5% | 10% | |
| | (-3.716) | (-2.986) | (-2.624) | | (-3.716) | (-2.986) | (-2.624) | |
| GDP growth | | -1,49 | | 0,5386 | | -6,209 | | 0,00000 |
| ODAJ | | -0,939 | | 0,775 | | -8,708 | | 0,00000 |
| IID | | -1,137 | | 0,7002 | | -23,146 | | 0,00000 |
| EXP | | -1,315 | | 0,6222 | | -6,69 | | 0,00000 |

Source: Author’s calculation by using data from National Enterprise Database, Ministry of Industry and Commerce, Lao PDR. Department of International Cooperation, Ministry of Planning and Investment, Laos. Ministry of Foreign Affairs, Japan.

Remarks: -There is a first difference at all significance 1%, 5%, and 10% levels
-The unit root test method relies on three extended models of Dicky Fuller such as: with intercept, with trend and intercept, and without trend and intercept.

As the result showed in Table 1, the result of ADF for the unit root test at the first difference rejected the null hypothesis of non-stationary with the significant level of 5% and the result of the T-test was greater than the T critical value; thus variables were cointegrated at I (1), it meant the next step is to analyze by using ‘lag order selection’ to test the long-run relation of variables, the result showed in Table 2.

Table 2

Lag Selection for Cointegration Test

| Lag-order selection criteria | | | | | | | | | |
|------------------------------|----------|--------|----|-------|----------|----------|-----------|---------|--|
| GDP growth, ODAJ, IID, EXP | | | | | | | | | |
| Sample: 1994 thru 2020 | | | | | | | Years= 27 | | |
| Lag | LL | LR | df | p | FPE | AIC | HQIC | SBIC | |
| 0 | -426.763 | | | | 1.30E+10 | 31.8343 | 31.8771 | 31.9783 | |
| 1 | -389.329 | 74.868 | 9 | 0.000 | 1.6e+09* | 29.7281* | 29.8994* | 30.304* | |
| 2 | -385.02 | 8.6196 | 9 | 0.473 | 2.40E+09 | 30.0755 | 30.3752 | 31.0834 | |
| 3 | -373.047 | 23.945 | 9 | 0.004 | 2.10E+09 | 29.8553 | 30.2835 | 31.2952 | |
| 4 | -364.209 | 17.677 | 9 | 0.039 | 2.40E+09 | 29.8673 | 30.4239 | 31.7391 | |

¹ Official Development Data gathered from the Department of International Cooperation, Ministry of Planning and Investment, Lao PDR www.rtm.org.la
Value of electronic investments gathered from National Enterprise Database, Ministry of Industry and Commerce, Lao PDR <http://www.erm.gov.la/>

Source: Author's calculation by STATA
 *Indicates lag order selecting

Table 2, compares the lags selection before moving to the Johansen cointegration stage; by using the result of FPE, AIC, HQIC, and SBIC, finally, the result of lags retained for the cointegration test was at 1.

Table 3

Johansen test for Cointegration

| Null Hypotheses (H0) | Eigenvalue | Trace Statistic | | Result | Eigenvalue | Max-Eigenvalue Statistic | | Result |
|----------------------|------------|-------------------|------------------|----------|------------|--------------------------|----------------|----------|
| | | Critical Value 5% | Trace Eigenvalue | | | Critical Value 5% | Max-Eigenvalue | |
| 0 | | 47.21 | 60.8071 | Rejected | | 27.07 | 46.0114 | Rejected |
| 1 | 0.79538 | 29.68 | 14.7957* | Accepted | 0.79538 | 20.97 | 9.3233* | Accepted |
| 2 | 0.27494 | 15.41 | 5.4724 | Accepted | 0.27494 | 14.07 | 5.1784 | Accepted |
| 3 | 0.16353 | 3.76 | 0.294 | Accepted | 0.16353 | 3.76 | 0.294 | Accepted |
| 4 | 0.01009 | | | | 0.01009 | | | |

Source: Author's calculation by STATA

Remarks: * Trace and Max indicate 1 cointegrating equation at 0.05% level

The result of the Trace and Max Eigenvalue test in Table 3 indicated that there is 1 cointegration equation between variables, at the significant 5%, the trace eigenvalue 14.7957 is lower than the critical 29.68 value and it is the same for max eigenvalue 9.3233 is lower than critical value 20.97, both implied that there is one cointegration equation between variables. The result showed the adoption of the vector error correction model or VECM. The next stage of the analysis is to check the relationship between variables as shown in Table 4 and Table 5.

Table 4

VECM estimation and results in the long run

| | Coefficient | Std. err. | z | P> z | [95% conf. interval] | |
|-------------|-------------|-----------|-------|-------|----------------------|-----------|
| D_GDPgrowth | | | | | | |
| _ce1 | | | | | | |
| L1. | -.1380073 | .0509545 | -2.71 | 0.007 | -.2378764 | -.0381383 |
| GDPgrowth | | | | | | |
| LD. | -.3213748 | .204633 | -1.57 | 0.116 | -.722448 | .0796984 |
| ODAJ | | | | | | |
| LD. | .0067173 | .0146025 | 0.46 | 0.646 | -.0219031 | .0353376 |
| IID | | | | | | |
| LD. | .0007451 | .0003059 | 2.44 | 0.015 | .0001456 | .0013446 |
| EXP | | | | | | |
| LD. | -.0002287 | .0001908 | -1.20 | 0.231 | -.0006027 | .0001453 |
| _cons | .1665829 | .2752901 | 0.61 | 0.545 | -.3729757 | .7061415 |

Source: Author's calculation by STATA

Table 5

Short-run estimation by VECM

| Cointegrating equations | | | | | | |
|--|-------------|-----------------|---------------|-------|----------------------|-----------|
| Equation | Parms | chi2 | P>chi2 | | | |
| _ce1 | 3 | 79.02119 | 0.0000 | | | |
| Identification: beta is exactly identified | | | | | | |
| Johansen normalization restriction imposed | | | | | | |
| beta | Coefficient | Std. err. | z | P> z | [95% conf. interval] | |
| _ce1 | | | | | | |
| GDPgrowth | 1 | . | . | . | . | . |
| ODAJ | -.0036787 | .0317141 | -0.12 | 0.908 | -.0658372 | .0584798 |
| IID | .0068246 | .0011151 | 6.12 | 0.000 | .004639 | .0090102 |
| EXP | -.003062 | .0004909 | -6.24 | 0.000 | -.0040242 | -.0020998 |
| _cons | -7.292783 | . | . | . | . | . |

veclmar

Lagrange-multiplier test

| lag | chi2 | df | Prob > chi2 |
|-----|---------|----|-------------|
| 1 | 6.2609 | 9 | 0.71354 |
| 2 | 11.8464 | 9 | 0.22211 |

H0: no autocorrelation at lag order

Source: Author's calculation by STATA

The previous findings of (Burnside and Dollar, 1998) and some authors indicated that ODA enables the growth of each developing country, however, the coefficient of the interaction term between foreign assistance and growth is not positive in the long run, but in the short run, there is a positive relationship between ODA and growth. The result in Table 4, showed a positive relationship between ODA and growth as well as investment and growth in the long run, but not for the export; another result in the short run effect, ODA had a negative relationship as well as the variable 'export' showed negative relation to growth; however, the industrial investment showed positive relationship to growth. The result of this study was different from that of Yahyaoui et al., (2019), there was a negative relation as well and the result of Kawthar Aghoutane et al., (2017) showed that ODA has no positive relationship to growth in the long run, but there is positive relationship in the short run of ODA and growth.

The result of the unit root test in Table 1, was the link to the testing of Johansen co-integration in Table 3. This study used the Johansen method and VECM to test the relationship of the non-stationary variables such as GDP and ODA. The interaction term of ODA, industrial investment, and export also resulted, but there was only investment had a positive relationship to growth in both the long and short run, however, export had a negative relationship to growth in both the long and short run, and ODA was only negative in the short run.

Table 2 shows the procedure of selecting lag for investigating cointegration at the same lag level between variables. Thus, the result of the lag selection is 1 for all variables by using the Johansen cointegration method. On the other hand, some signs of estimated coefficients among controlling variables were against prior expectations such as export which is negative. The United Nations (2019) has stated that the evidence from some least developed countries had shown a negative trend relationship against the established economic theory, because of their domestic management in economic structure, way of cultural and societal obstruction is also concerned.

By relying on the results of the short run in Table 4, the scale of each coefficient in VECM such as ODAJ is -0.0036, IID is 0.0068 and EXP is -0.0031, these scales were smaller than 0.4 as mentioned in the methodology section, each variable did not show any effectiveness sign to impact on the economic growth of Laos, but the *ecmt-1* in the short run was -7.29 (which was closer to zero), this implied that the smaller value of *ecmt-1*, the goodness of fit of the VECM in this study. Certainly, the result of 'veclmar' in Table 4 also showed that there is no autocorrelation at lag 1 and the P-value is 0.71354 which is greater than 5% of the significant level. Thus, acceptance of the utilization of VECM in this study is more appropriate. However, this study did not use the results to compare with some research that found a greater amount of ODA is associated with the greatest level of growth effectiveness.

5. CONCLUSION

The discussion on the impact of ODA on growth is comprehensively concise in that assistance from overseas is significant to improve the status quo of many least-developed countries. However, the result in this study encompassed that the Japanese ODA has no sign to impact on the growth of Laos, which meant it is not effective to enhance growth, this result was derived from VECM analysis. On the other hand, in the long run, Japanese ODA becomes more reliable to cause growth. The relationship, in the long run, is robust by using annual non-stationary time series and a unique method in econometrics. In summary, Japanese official development assistance in the short run was not effective for the growth in Laos as well as industrial investment and export, especially since the result showed a negative relationship between ODA and growth in the short run; other indicators such as industrial investment had a positive relationship to growth in the short run, but export had negative effect to growth in both long and short run.

ACKNOWLEDGEMENT

This author is thankful to the Department of Evaluation, Ministry of Planning, and Investment in Laos for providing funds for this research so that the author could carry out this work successfully.

REFERENCES

- Annual Report for ODA in Laos. (2017). Ministry of Planning and Investment. <https://rtm.org.la/wp-content/uploads/2017/08/Foreign-Aid-Implementation-Report-final.pdf>
- Bhavan, T. (2013). Policies and effectiveness of foreign aid: The case of Sri Lanka, *Asian Economic and Financial Review*, vol. 3(3), 363-372: <https://www.semanticscholar.org/paper/An-empirical-analysis-of-international-capital-for-Zhang/e91ad44828b211dd89636df0a6a7358f307ce597>
- Burnside, C., & Dollar, D. (1998). Aid, policies, and growth. The World Bank Policy Research Working Paper, No. 1777. The World Bank.
- Burnside, C., & Dollar, D. (2000). Aid, policies, and growth. *The American Economic Review*, 90(4), 847-868. <https://doi.org/10.1257/aer.90.4.847>

- Chong, A., Gradstein, M., & Calderon, C. (2009). Can foreign aid reduce income inequality and poverty? *Public Choice*, vol. 140. 59-84. [10.1007/s1112700994124](https://doi.org/10.1007/s1112700994124).
- Dickey, D. A., & Fuller, W.A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74, 427-431.
- Djankov, S., Montalvo, J., & Reynal-Querol, M. (2008). The curse of aid. *Journal of Economic Growth*, vol. 13(13). 169-194. <https://www.researchgate.net/publication/225659941> The Curse of Aid
- Kkanayake, E., & Chatrna, D. (2010). The effect of foreign aid on economic growth in developing countries. *Journal of International Business and Cultural Studies*, vol. 3. 21-33. Academic and Business Research Institute.
- Franco, S., McGillivray, M., & Morrissey, O. (1998). Aid and the public sector in Pakistan: Evidence with endogenous aid, CREDIT Research Paper, No. 98(2). UK: The University of Nottingham.
- Kawthar Aghoutane, & Mohamed Karim. (2017). The impact of foreign aid on economic growth in Morocco: Econometric analysis using VECM, *International Journal of Economic and Finance*, vol. 9, No. 5, 2017 ISSN 1916-971X.
- Rea, L. M., & Parker, R. A. (1992). *Designing and conducting survey research*. San Francisco, CA: Jossey-Bass.
- Thian, Y., & Evan, L. (2018). Does foreign aid contribute to or impede economic growth? *Journal of International Studies*, vol. 11(3). Accessed on 24 Nov 2021. https://www.jois.eu/?442,en_does-foreign-aid-contributes-to-or-impeded-economic-growth
- Todaro, M. P., & Smith S. C. (2015). *Economic development 12th edition*. Topic: Efficiency of foreign aid 747-756. Pearson Series of Economics.
- United Nations. (2019). The least developed countries report. UNCTAD/LDC/2019. United Nations Publication.
- World Bank Data. (2022). *GDP growth-Exports-Investments*. Dataset of Laos provided by the World Bank. <https://data.worldbank.org/>
- Yahyaoui, Ismanhen, Bouchoucha, Najeh. (2019). The long run relationship between ODA, growth, and governance: An application of FMOLS and DOLS approaches. MPR Paper No. 95938. Retrieved from MPRA_paper_95938 effectiveness.pdf