

様 式 C - 19、F - 19 - 1、Z - 19 (共通)

科学研究費助成事業 研究成果報告書



令和 元 年 6 月 12 日現在

機関番号：12401

研究種目：基盤研究(C) (一般)

研究期間：2016～2018

課題番号：16K03607

研究課題名(和文) Policy Simulation of AEC Integration and Japanese ODA (MJC2015)

研究課題名(英文) Policy Simulation of AEC Integration and Japanese ODA (MJC2015)

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交付決定額(研究期間全体)：(直接経費) 3,400,000円

研究成果の概要(和文)：AEC統合の政策シミュレーションと日本のODA(MJC2015)は、1) マルチセクター地域モデル(計算可能な一般均衡モデル)を構築するとともに、2) そのモデルによるシミュレーションにより、日本からの物理的および社会的インフラへの外生的ODA(政府開発援助)の供与の影響が、より良い所得分配と工業化への影響を検証することである。

我々のモデルシミュレーションは、すべての情報源と日本からのODAがCLMVにプラスの影響を与えるだろうが、CLMVとタイの賃金格差は依然として存在する。ドナーである日本はCLMVへのODAフローを継続すべきであるとの政策的な含意が得られた。

研究成果の学術的意義や社会的意義

研究結果の学術的意義と社会的意義は、ODAが中長期的に経済成長と所得分配にプラスの影響を与えることを証明することである。これまでの先行研究の中では、途上国へのODAが効果的ではなかったとの結果を提示しているものもあるが、本研究はこうした研究に科学的に反証を加えるものである。

研究成果の概要(英文)：The Policy Simulation of AEC Integration and Japanese ODA (MJC2015) obtained financial support from the JSPS. It has aimed to 1) Construct a multi-sector-regional model. It is a computable general equilibrium model with explicit Social Accounting Matrices of ASEAN with CLMV, Japan, and the rest of the world. The model syntax is in GAMS. 2) The hypothesis is to test the hypothetical exogenous ODA (Official Development Assistance) impact on both physical and social infrastructure from Japan would have on the CLMV economies towards industrialization with better income distribution and U-turn of migration back to CLMV.

Our model simulation has proved that the ODA from all sources and Japan will have a positive impact on the CLMV and although had little economic repercussion on another ASEAN country. The wage gap of CLMV-Thailand still exists. Net migration from CLMV especially from Myanmar continued. The implication is that Japan/donors should continue the ODA flow to the CLMV.

研究分野：Economic Development and Economic Modeling

キーワード：Japan ODA

0, % Eb % \$ (Purpose of Research)

1. > □ (Methodology of Research)

2. Research Outcomes

Policy Simulation of AEC Integration and Japanese ODA (MJC2015).

Abstract The paper analyzes the role of the ‘Official Development Assistance, ODA’ to synthesize with the rest of the papers in this journal. The ODA is determined from policy dialogue between donors and recipients. It is a public flow of resources other than FDI and Trade flow which are privately determined. The paper has shown that net ODA flow to each Mekong (CLMV) economy would have a positive economic impact differently owing to their level of economic development structure. The analysis by a dynamic Computable General Equilibrium (CGE) which is multi-sector and region has assumed a continuation of the net ODA (inclusive of Japan’s ODA) flow to the Mekong 2015-2020. It is assumed the flow to benefit the physical and social infrastructure. The simulation has shown that the ODA to education and skill training has also proved to have a significant impact on industrialization, strengthen trade in goods and services. It, however, has induced widening wage gap between CLMV and rest of ASEAN and Rest of World. Thus, we still have observed the tendency of the outgoing migration. The synthesis of all results will be the starting position of the Mekong economy to plan for their long-term sustainable growth and development.

Keyword Mekong, ODA, impact on Growth, Trade and Migration, sustainable growth and development potential of Mekong economy

JEL Classification C32, C51, C53, F12, F13, F14, F21

1 Introduction

The ODA flow to Mekong economy, the CLMV was remarkable after the 1990's. During 1970-2015,

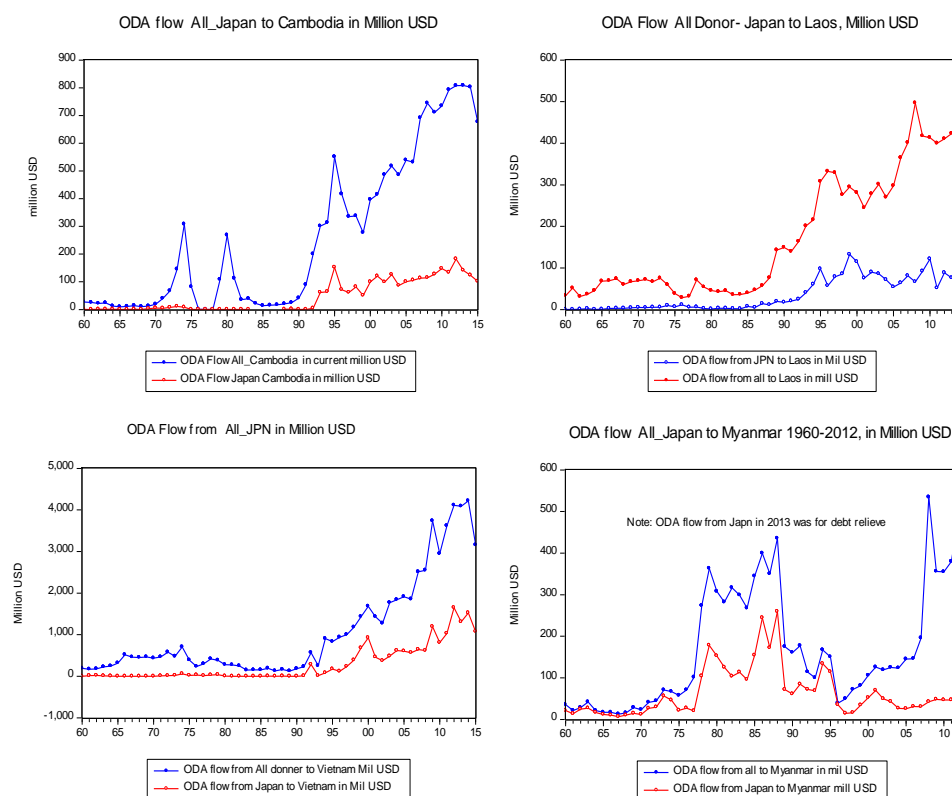
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² This paper is a summary of the paper ‘The Economic Impact of the Official Development Assistance in the Mekong Economy’, it is a fruit of the research funded by the JSPS ‘Academic Research Fund’ (Ka-Ken No. 16K03607-00 C-type H28.04.01-H31.03.31). The title of research: *Policy Simulation of AEC Integration and Japanese ODA* (MJC2015). This paper is a revised version after the JAAE conference, Tokyo, November 2017. The author would like to thank Dr. Taguchi H., Dr. Nagashima, M., Saitama University and Dr. Yamada, Chukyo University, JAPAN for their valuable comments and advise.

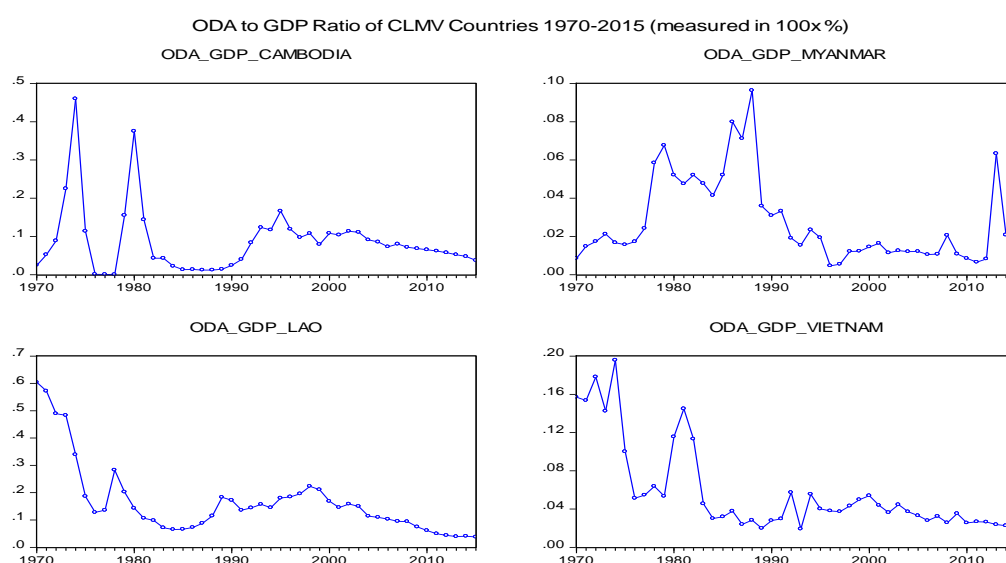
ODA/GDP ratio was 16.6% p.a. for Laos, 8.6% p.a. for Cambodia, 2.76% p.a. for Myanmar, and 5.76% p.a. for Vietnam respectively. The annual average of Japan's ODA/GDP during the 1990-2015 period was 1.46, 2.04, 0.55 and 0.94 percent for the Cambodia, Laos, Myanmar, and Vietnam respectively, indicating that Laos was still on average the largest recipient of Japan's ODA in her GDP.

Thus, in order to fulfill the role of ODA mentioned above, we, therefore, apply a Computable General Equilibrium Model to estimate the impact of external flow from official sources like ODA into the Mekong countries like Cambodia, Laos, Myanmar, and Vietnam. The multi-regional CGE model will provide an interactive feedback between these selected Mekong with Thailand, rest of ASEAN and Rest of the World. We will try to answer the research question that what if ODA flow to the selected economies in continuation from pre-AEC (ASEAN Economic Community) integration in 2015-until 2020.

Fig.1 Comparison of ODA flow from All Donor and Japan 1960-2015



Source: OECD <https://www.oecd.org/development/stats/idsonline.htm>



Source: OECD <https://www.oecd.org/development/stats/idsonline.htm>

2 Econometric Model

The econometric model is represented by the logarithmic relationship between HDI and labor supply potential can be read as follows: *a 1 % change of HDI score leads inversely to the growth of supply potential or namely human capital growth of x% per year*. It can be read also that 'an inverse mapping of a 1% change in human capital leads to an increase of HDI score, (1/x) % from baseline.

3 The Economic Impact of the ODA to CLMV (2016-2020): A CGE Model

The CGE model requires calibration of parameterization of the HDI-ODA pair independently for each CLMV country. Our partial econometric estimation below shows the exogenous impact of an increase of 1% of ODA disbursement. It will raise the HDI score of 0.33% for Cambodia, 0.47% for Laos, 0.05% for Vietnam and 0.08% for Myanmar accordingly.

4 The Prospect of Macroeconomic Growth, Industrialization and Income Distribution

ODA impact on the Economic Stability

We have investigated whether the ODA flow would have any effect on external macroeconomic stability. It is found that the economic growth of Cambodia and Laos and Vietnam have still stimulated external instability. The current account deficit-GDP ratio of these three countries has been deteriorated. The ODA flow as net resource flow into the economies has however improved such external instability. Myanmar, on the other hand, has enjoyed current account surplus in the medium-term with minor deterioration as a result of ODA flow. For CLMV's internal stability, it can be shown from consumer's price inflation for Myanmar and Vietnam. It has increased less than one percentage point. Inflationary pressure has been declined for Laos and Cambodia. The ODA did not destabilize the macro-economy of CLMV. The CGE model simulation may help justify the role of macroeconomic management in Mekong economy as in the example of Cambodia pointed out by Samreth S. et. al (2018). The ODA flow will strengthen the macroeconomic prudential management.

ODA and Income Distribution

It is always a question whether ODA flow has worsened the income distribution of developing countries. In our study, even though the ODA flow to CLMV has raised a household's income in the CLMV. The ODA flow scenario (SIM) has contributed to the household income growth as compared to the business as usual (BAU). Surprisingly, the ODA flow has deteriorated the factor income distribution of household. Labor income share of Cambodia, Laos, and Vietnam have deteriorated during 2016-2020. In other words, the ODA flow (SIM) has biased in favored of the capital income. Myanmar, on the contrary, has a minimally progressive household income distribution. The growth of labor income share in the case of SIM is higher than the BAU case inconsistent with the overall household's income growth.

It is interesting to see that the ODA flow (SIM) has stimulated the growth of the wage index in the region for both skilled and unskilled wage. The wage growth in the scenario of ODA flows over the past trend (BAU). The skill wage index was induced to grow at a higher rate than the case of unskilled wage during 2016-2020. This signifies the role of ODA flow. Thus, ODA may be said to have deepened the labor skills formation in the CLMV over time. This may raise the question whether the 'Turning point' of Vietnam and Cambodia would be in a near future if skills increase owing marginal productivity will equalize with a real wage in Mekong economy following Thailand as has been proved by Bowonthumrongchai T. (2018).

ODA and Industrialization

The labor skill formation together with the physical infrastructure investment in CLMV may have induced the total factor productivity growth from the supply side. On the demand side, the higher degree of trade openness as a result of FDI and ODA has positively linked to the growth potential of CLMV. This can happen with the industrialization process. The ODA flow in the case of scenario (SIM) has induced a rapid industrial growth in the region as compared with the BAU case. The structural change of industry in CLMV is interesting. The share of primary sector (comprising Grains and crops, livestock and meat product, and Mining and Extraction) in Laos (49.3%) and Myanmar (48.39%) are still high when compared to Vietnam (40.52%) and Cambodia (31.83%). The share of primary value added of Cambodia and Vietnam have been declining during 2016-2020. This signifies structural change away from primary industries. Myanmar and Laos on the contrary still have their primary sector's share increased with ODA flow. The value-added share of 'Processed Food Textiles and Clothing' for Cambodia (16.63%) and Laos (12.15%) are much higher than those of Vietnam (6.20%) and Myanmar (1.82%). Cambodia is base for textiles and clothing production while Laos is the destination of foreign

direct investment in processed food and drink. The ODA flow scenario has induced industrialization in these industries. Its share has surpassed over its BAU. The share of the 'Other Light Industries and Heavy Manufacturing Industry' of Vietnam (12.52%), Laos (10.8%) and Myanmar (9.41%) are still in their early stage. Although the classification of sectors is somewhat arbitrary, the most important is to realize that the increase of the ODA flow is *positively* correlated with the 'Light and Heavy' industrialization process in CLMV. It is interesting to see that share of the 'Services Industry' of Cambodia, Laos, and Vietnam except Myanmar will be decreased when ODA has increased. The overall conclusion can be said that there are structural changes in favor of manufacturing growth when CLMV has obtained ODA flow from abroad. This may be comparable with the findings by Ketsawa W. (2018) in this journal despite different in the epoch of development. That is to say Mekong economy especially Vietnam seems to climb up the GVC following Thailand. This is consistent with the study pointed out by Taguchi H. et al (2018) in this journal. Migration Outflow and Indirect Economic Impact on Thailand and Other ASEAN

The ODA has affected the wage of skilled labor as well as unskilled labor. The wage gap still exists between CLMV and destination like Thailand. Thus, an outflow of migrant to Thailand and Other ASEAN continues. In 2020, Thailand as the destination of CLM emigrants will absorb foreign migrant from Myanmar 1.599 million persons. Thailand has minor indirect benefit from the ODA flow to CLMV. Interesting enough, the rest of ASEAN have a tendency of *net loss* while Rest of the World has a tendency of *net benefit*. All benefit and loss minimally change from BAU. The net gains are consistent with export and import growth of scenarios (SIM) over its BAU trend.

5. Discussions and Synthesis³

Growth prospect of CLMV can be continued during post-AEC Integration 2016-2020 as result of FDI, Trade Openness, and ODA. The ODA which Japan's ODA as a significant donor is able to drive economic growth in Mekong or CLMV as expected. The trade openness shown by the export and import growth in CLMV is impressive. The current account has shown deterioration income members country. But the overall, external and internal stability judging from current account deficit and consumer price inflation are stable and manageable. Household private consumption which represents the welfare of household has increased as a result of ODA flow (SIM) over the BAU. Likewise, CLMV can rely on own gross fixed capital formation as the private sector grows; the government's income has been satisfactorily increased as well.

On the supply side, ODA has induced industrialization along with growth in favor of manufacturing. This is consistent with the changing wage index as a result of skill formation of labor. The wage index growth implies a labor productivity growth as well. In fact, the ODA flow has exogenously induced the 'Total Factor Productivity' growth of the overall production system as well. The scenario ODA flow (SIM) has induced a wage growth and TFP growth over the BAU in favor of skill wage earners in general.

The Real wage growth in CLMV has induced the increase of household's labor income. Interesting enough, the factor income distribution is in favor of capital income rather than labor income share. Despite wage growth and industrialization, out-migration from CLMV is still continuing during 2016-2020. The wage gap between CLMV and neighboring country like Thailand and Rest of ASEAN has attracted an outflow of a migrant from CLM in particular.

Vietnam, on the other hand, has been the main recipient of FDI and ODA for some time has been able to outreach her trade openness towards international markets. *Vietnam has shown rapid industrialization* in her industrial structure as well. Myanmar is latecomer among CLMV in ODA destination. *Myanmar has still concentrated in her initial industrial development. Cambodia has been advanced on her Textile and Clothing industry* while Laos is the destination of Process Food and Beverages as well Other Light Industries (Assembly line of motorcycles). Laos has been advanced on hydroelectricity generation and aimed to export of this product to neighbors.

In sum, Mekong CLMV's macroeconomic growth and stability, industrialization and structural change as well and the growth of household income and welfare will be continued if ODA flow would be increased 2016-2020. International donors and Japan's ODA which concentrates on the infrastructure and manufacturing prior to 2015 may need to reconsider to increase the ODA on 'social infra-structure' e.g., education, for the public as well as training for the private sector that leads to rising capability of management and means a year of schooling. The ODA from Japan and other donors has *necessitated* infrastructure development. It is the core of donors' ODA policy until recently. The social ODA in our study is proved to be a *sufficient condition* for growth and development in CLMV in the post-AEC

³ Appendix Notes: Any references in this short summary please see Kitti Limskul (2019), 'The Economic Impact of the Official Development Assistance in the Mekong Economy', in The Social Science Review, No.156 March 2019. Saitama University, Japan.

Integration 2016-2020. Our study has added more general results to other studies on the Mekong economy.

3 ¼ (List of Publications)

2 □ (Number of Papers)

- 1) Tran Van Hoa and Kitti Limskul (2017), 'Japan's ODA in Globally Integrated CLMV Economies: Aid Effectiveness and Political Economy', Korea and the World Economy, Vol.18, No.3, December 2017, ISSN 2234-2346. Page 299-327.
- 2) Kitti Limskul (2019), 'The Economic Impact of the Official Development Assistance in the Mekong Economy', in The Social Science Review, No.156 March 2019. Saitama University, Japan.

3 □ (Number of Presentations at Academic Conferences)

- 1) Limskul, K. and Tran Van Hoa (2017), 'Impact of Japan's ODA on CLMV Growth and Trade' presentation in The 6th Chula ASEAN Week, ASEAN Next Step in the Changing World, August 1-4, 2017.
- 2) Limskul, K. (2017), 'Impact of Japan's ODA on CLMV's Growth and Trade under Regional Economic Integration: An Econometric Model Analysis.', 2017 年度日本応用経済学会, 春季大会 6 月 17 日 2017 久留米大学, 九州.
- 3) Limskul, K. and Tran Van Hoa (2017), 'Economic Impact of Japan's ODA and AEC Integration: A CGE Model Policy Simulation', 2017 年度日本応用経済学会秋季大会 10 月 28 日, 2017 東海大学 (高輪キャンパス)

1 □ (Number of Books)

- 1) Kitti Limskul and Tran Van Hoa (2017), 'Impact of Japan's ODA on CLMV Growth and Trade' in Piti Srisangnam ed., Human Resource Landscape in Mainland ASEAN, under publishing process by the ASEAN Study Center, Chulalongkorn University, Thailand.

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