

Japan's ODA in Globally Integrated CLMV Economies: Aid Effectiveness and Political Economy*

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The CLMV (Cambodia, Laos, Myanmar and Vietnam) countries have globally integrated in recent years achieving high growth and increasing living standard that are attributable to expanded trade and FDI and especially ODA. To complement other studies on CLMV growth and development causality from an empirical perspective, the paper develops a new economic integration model of endogenous growth to study specifically the impact of Japan's ODA on trade and growth in the CLMV countries. The model is then applied to each of the four CLMV countries to investigate the impact of Japan's ODA, openness, and FDI on its growth and trade. The purpose is to provide useful input to support evidence-based policy analysis of ODA, development, trade, and FDI in these countries to meet United Nations 2015 sustainable development goals. The approach and findings are particularly relevant to new emerging donors in Asia such as China and Thailand and especially Korea where outgoing foreign aid has greatly increased since 1987 reaching USD1,915.25m in 2015.

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1. INTRODUCTION

The CLMV countries (Cambodia, Laos, Myanmar and Vietnam) are key and strategic members of the important Mekong River Subregion (that includes China and Thailand), the 10-member ASEAN and its various expanded regional and mega free trade agreements (ASEAN, 2017). Since their integration into the global economy in recent years, the CLMV countries have liberalised trade and investment and increased regional co-operation and, as a result and in combination with significant domestic reforms, achieved high growth, increasing living standard and reducing poverty. Being the poorer members of the ASEAN however, the CLMV countries have also attracted generous ODA (official development assistance) from the OECD DAC especially Japan over the decades and Korea, China and Thailand in recent years (OECD, 2017) to assist more effectively their national development agenda and implementation, to reduce their regional economic gap, to promote economic integration (Mikishima and Yokoyoma, 2008) and to meet international (e.g., ADB, UN, and WB) sustainable development objectives. This regional and international co-operation and assistance has also been justified on the CLMV's geo-political importance and the utilitarian ground that this region of 220m people is a huge market for trade, investment and business opportunities and is also strategically endowed with underexplored bountiful natural and human resources (EIC, 2016).

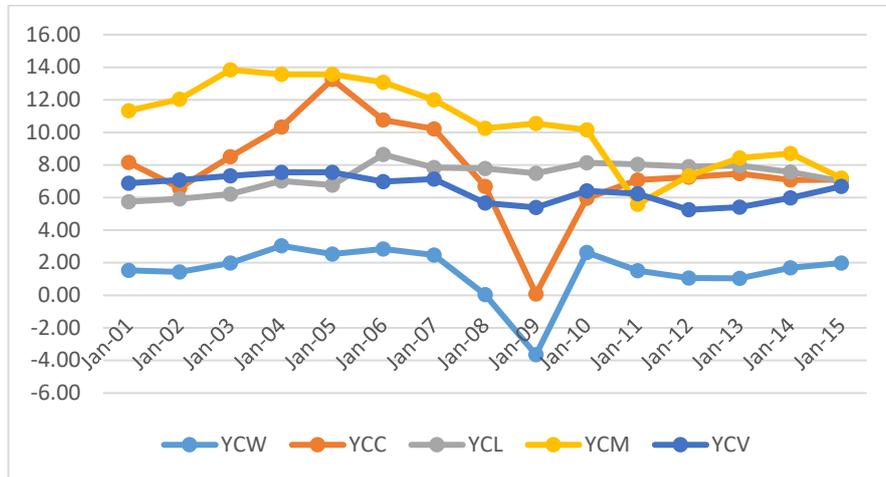
A number of studies have been undertaken to investigate especially Japan's ODA to the CLMV countries and, to a lesser extent, its impact on growth and development. These studies involve generally a detailed description of major ODA-supported projects and to a much lesser extent their microeconomic assessment (e.g., Makishima and Yokoyoma, 2008; Makishima, 2010; Pan, 2014; EIC, 2016) but lack strong empirical and analytical content at the macroeconomic level for useful national policy debate and analysis. The paper is a contribution from an econometric perspective to the literature in this aspect of CLMV growth-trade causality and the importance of Japan's ODA and its impact on the CLMV countries. It will develop an appropriate model of

growth and also trade for open economies (Tran, 2007a, 2007b; Tran and Limskul, 2013) which is based crucially on the fundamental causality concept of regional trade agreement (RTA) or economic integration where trade, FDI, services and capital inflows-related ODA (not conventional capital and labour) are specified as key drivers of growth (WTO, 2017). In addition, the model assumes circular causality between growth and trade (Tran, 2007a, 2007b), and specifies 'economic conditionality' as having simultaneously influence on growth and trade (Johansen, 1982; Krueger, 2007). To be of specific significance and relevance, empirical findings from the model for each of the CLMV countries are then analysed and appropriate policy implications presented.

The plan of the paper is as follows. Section 2 gives a summary of the patterns of growth, trade, FDI and Japan's ODA in the CLMV countries and their possible graphical interaction. Section 3 describes the impact model of growth and trade and its important features. Section 4 reports the model's data, empirical findings and their characteristics. Section 5 describes key policy implications and implementation recommendations. Section 6 concludes.

2. THE CLMV ECONOMIES' MAIN INDICATORS

Due to their historical structural and reform complexity, the following descriptive discussion or graphical analysis is only on the statistical characteristics of the key data for an economic integration model of growth and trade (ASEAN, 2017) with domestic capital-supplemented ODA, and is based on the information from the databases of the UNCTAD (2017) and OECD (2017) and for the period 2001-2015. The period was selected because some of the other necessary variables used in estimation (e.g., terms of trade) was available only for this period. The key data in the model consist of growth, merchandise trade or openness (exports+imports/GDP), FDI/GDP, services/GDP and ODA/GDP. The ratio indicators are used to take into account of the different sizes of the CLMV economies for meaningful

Figure 1 World and CLMV Growth, 2001-2015

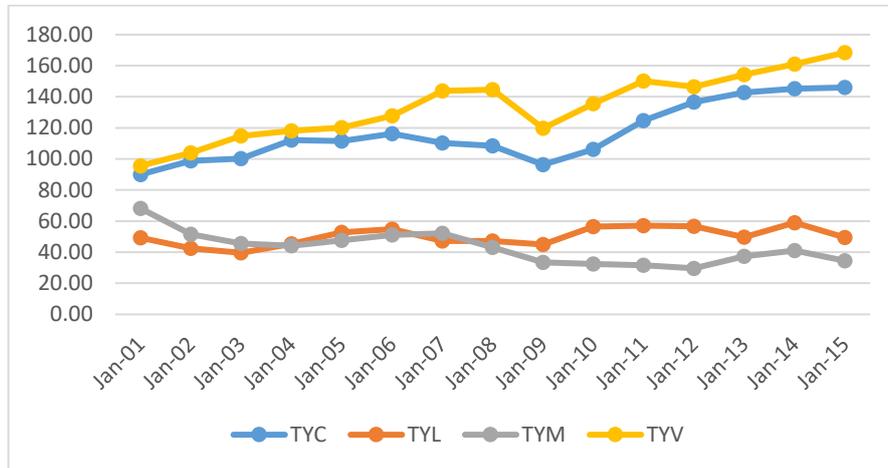
Note: YCW, YCC, YCL, YCM and YCV=Growth of the world, Cambodia, Laos, Myanmar and Vietnam respectively.

Sources: UNCTAD (2017), OECD (2017).

international comparison purposes. The historical patterns and movements of the key data for the CLMV are given in figures 1-5 respectively for a graphical analysis.

First, we note, from figure 1, that the growth rate of the CLMV countries and, for comparison, the world, was widely fluctuating (ranging from 0.09% in 2009 for Cambodia to 13.84% in 2003 for Myanmar) especially for Cambodia, Myanmar and the world economy during the period 2001-2015. The economic performance of Laos and Vietnam was however relatively more stable. The growth of all CLMV interestingly converged to about 7.00% in 2015. We also note, from figure 1, that the CLMV countries performed much better than the global economy during the period with an annual growth average of 7.77%, 7.34%, 10.51% and 6.50% respectively, as compared to 1.48% for the world. This high economic success of the CLMV was expected as historically countries with a low income or living standard would achieve, due to their low starting base, a higher growth. From these growth averages, Myanmar, even with its only recent adoption of a democratic process, performed best, followed by Cambodia, Laos and Vietnam in that descending

Figure 2 CLMV Openness, 2001-2015

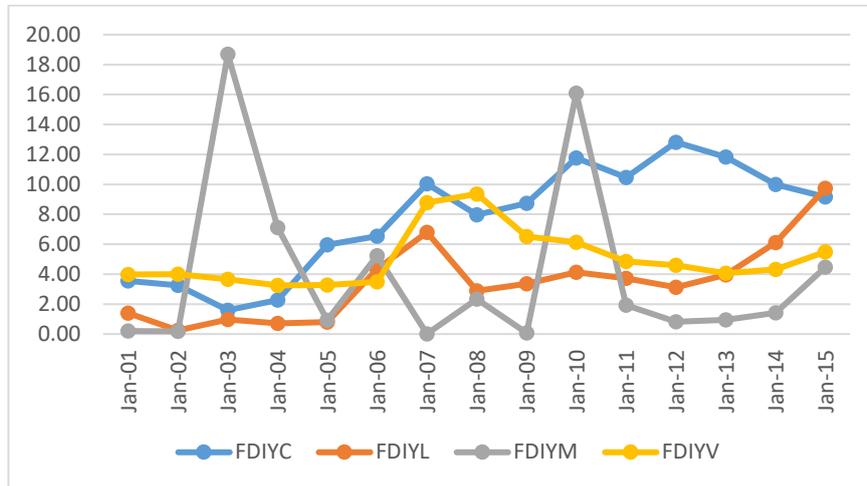


Note: TYC, TYL, TYM and TYV=Openness for Cambodia, Laos, Myanmar and Vietnam respectively.

Sources: UNCTAD (2017), OECD (2017).

order. From the figure, we also note the declining trend of growth of the CLMV countries especially Cambodia and Myanmar over the period. Interestingly, Cambodia was, like the world economy, the only country among the CLMV that was severely affected negatively by the global financial crisis (GFC) of 2008.

Figure 2 plots the pattern of openness (total trade/GDP) for the CLMV. This indicator is the key engine of growth in economic integration theory and also in the WTO membership objective. The pattern has an annual average of 116.39%, 50.14%, 42.89% and 133.63% for the CLMV respectively over the period 2001-2015. This indicates that Vietnam's openness was a dominant and high feature but, as discussed above, it was associated with the lowest growth average. Three important observations are noted from this figure. First, while Cambodia and Vietnam showed an increasing trend in their openness over time, Laos and Myanmar were characterised by a slight falling trend. Second, while the GFC appears to have negatively affected trade in Cambodia and more severely in Vietnam, both Laos and Myanmar seemed to have largely escaped the GFC contagion effect. Third, in spite of their national

Figure 3 CLMV FDI/GDP, 2001-2015

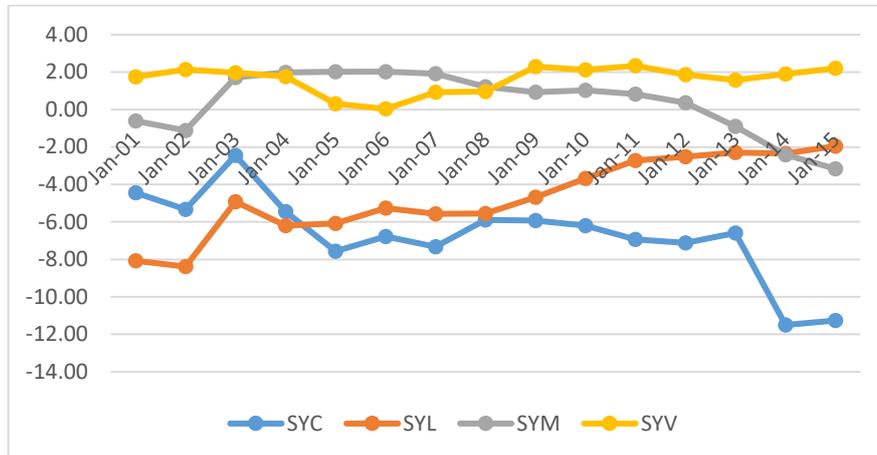
Note: FDIYC, FDIYL, FDIYM and FDIYV=FDI/GDP of Cambodia, Laos, Myanmar and Vietnam respectively.

Sources: UNCTAD (2017), OECD (2017).

differences, both the pairs of countries Cambodia-Vietnam and Laos-Myanmar appeared to have their similar level and pattern of openness over the period. The dominance of openness of Vietnam and Cambodia over Laos and Myanmar was however significant, reflecting their more advanced globalisation and economic integration policy.

The attraction of the CLMV to attract foreign capital to supplement their domestic savings for development purposes is a key component of growth in the context of RTA theory (but not necessary so in the WTO). Their data are given in figure 3 where the ratio FDI/GDP is plotted for 2001-2015. An interesting observation from the figure is that while FDI showed a generally rising trend over the period for the CLMV, it was highly fluctuating for each country and also divergent between the countries. More specifically, after a long period of rising trend from 2001 to 2012, Cambodia's generally dominant FDI started falling since 2012, while FDI in the other CLMV showed a strong recovery from this date. On average, the annual FDI/GDP is 7.73%, 3.49%, 4.03% and 5.05% for the CLMV respectively, reflecting their different levels

Figure 4 CLMV Services/GDP, 2001-2015

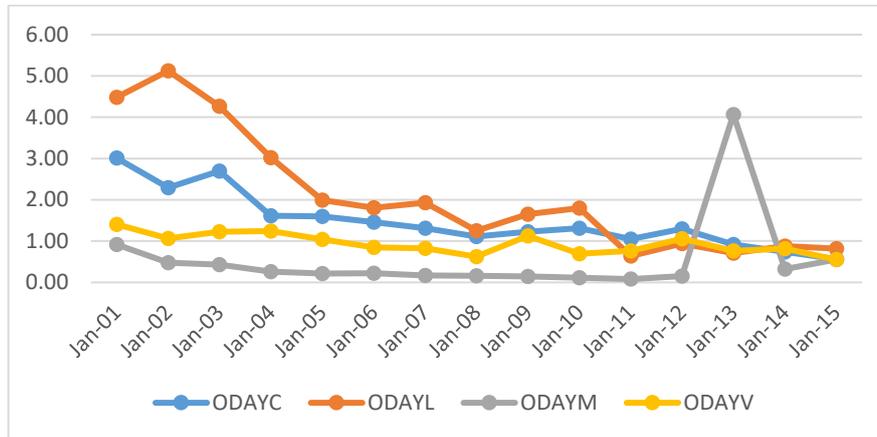


Note: SYC, SYL, SYM and SYV=Services/GDP of Cambodia, Laos, Myanmar and Vietnam respectively.
Sources: UNCTAD (2017), OECD (2017).

of openness. This also made Cambodia the largest recipient of FDI, followed by Vietnam, Myanmar and Laos in that descending order. The figure also shows that only FDI in Vietnam and Myanmar appeared to have been affected by the GFC. Myanmar received its largest boost of FDI during the Iraq War of 2003 and the post-GFC of 2010.

Trade in services, a significant growth determinant in economic integration theory, has become an increasingly important sector in the CLMV (EIC, 2016) is described in figure 4 where continuous deficit was noted for Cambodia and Laos during 2001-2015. During this period, Vietnam had enjoyed a sizable and growing trade surplus in services, and Myanmar's rising surplus started declining only since 2010. More specifically, from the figure, services deficit had improved in recent years for Laos but severely deteriorated on the other hand for Cambodia. On average, the annual deficit for Cambodia and Laos was -6.71% and -4.68% respectively, and the annual surplus was 0.39% and 1.63% for Myanmar and Vietnam respectively. Trade in services in the CLMV appeared however largely unaffected by the contagion of the GFC in 2008.

From the 1990s till recent years, Japan had been the largest donor to the

Figure 5a Japan ODA/GDP to CLMV, 2001-2015

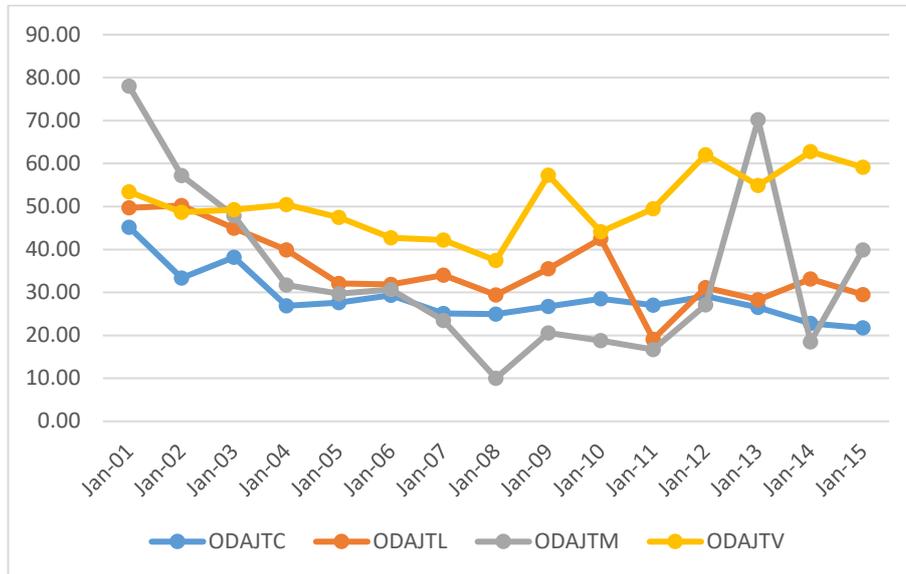
Note: ODAYC, ODAYL, ODAYM and ODAYV=ODA/GDP of Cambodia, Laos, Myanmar and Vietnam respectively.

Sources: UNCTAD (2017), OECD (2017).

CLMV (Mikishima and Yokoyoma, 2008) as its national aid policy. Japan's ODA as a percentage of the recipient country's GDP in the CLMV is given in figure 5a for the period 2001-2015. This ODA consisted of loans, grant aids and technical co-operation and involved hard and soft infrastructure aids. While Japan had been a major DAC donor to these countries over this period, the figure showed a general uniformly declining trend of Japan's ODA into all four countries in the CLMV. This was attributable to Japan's budget problem, lower taxation revenue and a bubble economy (Mikishima and Yokoyoma, 2008). A spike in Japan's ODA in 2013 was noted in the case of Myanmar after the country's adoption of democracy processes. The annual average of Japan's ODA/GDP for this period was 1.46%, 2.04%, 0.55% and 0.94% for the CLMV respectively, indicating that Laos was the largest recipient of Japan's ODA. It is interesting to note that in 2015, the ratio of Japan's ODA/GDP was converging to about 0.55% for Cambodia, Myanmar and Vietnam and 0.82% for Laos. No significant impact was noted from the figure of the GFC's effects on Japan's ODA into the CLMV.

While Japan had been the CLMV's largest ODA donor, its share per total world ODA had fluctuated greatly from 10.04% to 77.99% among the CLMV

Figure 5b Japan's ODA/ World ODA to CLMV, 2001-2015



Note: ODAJTC, ODAJTL, ODAJTM and ODAJTV=Share of Japan's ODA/World ODA to CLMV.

Sources: UNCTAD (2017), OECD (2017).

during the period 2001-2015. This is given in figure 5b. In this figure, the largest share with recent rising trend but with a GFC-related dip was for Vietnam peaking at 63.75% in 2014, followed respectively by Laos with a general declining trend with a peak of 50.21% in 2002, Myanmar with two spikes reflecting local geo-political conditions of 77.99% in 2001 and 70.18% in 2013, and Cambodia with a general falling trend with a peak of 45.20% also in 2001. Cambodia was the only country that was hardly affected by the GFC. On average, the annual share was 50.75% for Vietnam, followed by 35.42% for Laos, 34.69% for Myanmar, and 28.87% for Cambodia. In contrast to Japan's ODA/GDP measurement, Vietnam was the largest recipient in terms of Japan's ODA/world ODA.

The above summary statistical description of the CLMV's key growth and economic integration activities and their trends over 2001-2015 provides useful information on the state of these economies under globalisation with

Japan's ODA being a contributing focus and on their potential graphical or statistical association. To investigate empirically the causal interaction between these activities and especially the impact of Japan's ODA on the more specific indicators of growth (or development) and trade (with high relevance to aid for trade concepts) of the economies of the CLMV for sustainable development policy analysis, the following section will develop a new and appropriate modelling approach based on economic integration theory or SNA93 expenditure framework (WTO, 2017) and to provide substantive or data-based findings.

3. AN ECONOMIC INTEGRATION MODEL TO STUDY THE IMPACT OF JAPAN'S ODA ON THE CLMV COUNTRIES

The literature on the relationship between foreign aid or ODA and trade and especially growth has been extensive and their modelling specifications and methodologies vary widely from regression and linear gravity theory to time-series analysis (e.g., ARDL) and linear panel regression. Some of this work include Sachs (2005), Rodrik (2006), Easterly (2006, 2007), IMF (2007), Krueger (2007), Rajan and Subramanian (2007), Tran (2007a, 2007b), EIC (2016), Elavah (2016), Bhattarai (2017) and Sothan (2017). Importantly, the findings from these studies appear to support a weak or even a non-existent relationship. As mentioned earlier, the literature on econometric studies of the relationship between ODA especially Japan's ODA and growth and trade in the CLMV economies is hardly existent. Previous studies in this area deal mainly with a description of ODA-related projects or their analytical microeconomic perception assessment and include Makishima and Yokoyoma (2008), Makishima (2010), Pan (2014), and EIC (2016). The paper addresses this lack in the literature and also introduces an appropriate model in the new structural framework of contemporary economic integration/RTA theory and growth-trade simultaneity. In this model, ODA, being exogenously

determined conceptually and assumed as such in our case, can be regarded as a component of capital inflows (e.g., domestic savings/investment supplement) that affect development, growth and trade in developing countries. The model also has relevance to the aid-for-trade concept currently prevailing in global aid-trade policy analysis.

The development of a model for growth-trade-ODA causal study and development policy analysis under economic integration (or SNA93 expenditure) framework and its special features for the CLMV are based on the basic postulates of regional trade agreement (WTO, 2017), conventional international economics and trade (including gravity) theory (Frankel and Romer, 1999), and Johansen (1982) contributing factors. They are also supported by previous successful applications in the sense of Kydland (2006) where prediction-reality compatibility or empirical fit is a crucial credibility criterion (e.g., Tran, 2002a, 2002c, 2002d, 2004, 2005; Tran and Kitti, 2013). The economic foundation and econometric specification and the features of the model can be briefly described as follows.

We consider, for convenience and without loss of generality, a simple model of two simultaneous (circular causality) implicit or arbitrary functions for income (Y) and trade (T). This model comprises and extends the basic economic-theoretic postulates under economic integration theory linking essentially first growth to trade, investment, services, ODA (part of capital inflows), economic policy, shocks and reforms, and, second, trade to domestic and trading partners' demand, ODA, and other economic and non-economic factors. This model incorporates, in one important structural specification aspect, not only economic factors but also geographic or demographic attributes (see Frankel and Romer, 1999; Johansen, 1982) or demographic dynamics (see Kydland, 2006). Thus for simplicity

$$F1(a, Y, T, FDI, S, ODA, W) = 0, \quad (1)$$

$$F2(b, T, Y, YT, ODA, X, W) = 0, \quad (2)$$

where F1 and F2 are two implicit functionals linking income and trade to their theoretically plausible and empirically testable determinants. In this model, Y

may be defined as GNP or, by more popular convention, GDP, or income per head of population (Easterly, 2007). Trade may be defined as exports or imports or openness (exports plus imports/GDP). FDI and S denote foreign direct investment and services. ODA is net ODA to a recipient country or countries in focus. YT is the focus country's trading partners. X and W denote, respectively, other economic (fiscal, monetary, trade and industry policy — see Sala-i-Martin, 1991) and non-economic (e.g., size, policy reform and external shocks — see Johansen, 1982; Tran, 2005) variables, relevant to a country's growth or development. Importantly for our empirical study, in addition to Y, YT, T, FDI, S and ODA, data for X and W must be available and consistent with published time-series data in a standard Kuznets-type accounting framework (e.g., SNA93), or the accounting system of Stone (1988), or the recent World Bank World tables.

Using planar approximations and invariant transformations (e.g., see Allen, 1960; Tran, 1992a, 2004; Tran and Kitti, 2013), the 2-simultaneous equation model (1)-(2) can be written more explicitly in stochastic form and in terms of the rates of change for continuous economic variables (e.g., Y%, YT%, T%, FDI%, S%, ODA%, X%) and W of all the included econometrically exogenous and endogenous variables as

$$Y\% = a_1 + a_2T\% + a_3FDI\% + a_4S\% + a_5ODA\% + a_6W + u_1, \quad (3)$$

$$T\% = b_1 + b_2Y\% + b_3YT\% + b_4ODA\% + b_5X\% + b_6W + u_2. \quad (4)$$

In (3)-(4), Y% is growth or development indicator (the rate of change in real GDP) and the equations are linear and interdependent in the sense of Marshall or Haavelmo, a's and b's are the elasticities or impact parameters, and u's other unknown factors outside the model (Frankel and Romer, 1999) or the disturbances with standard statistical properties. In (3)-(4), circular and instantaneous causality in the sense of Granger (1969) or Engle-Granger (1987) exists or is regarded as a testable hypothesis. In their exact or nonstochastic forms (in which all disturbances are idealistically zero), these equations form the basic structure of the CGE/GTAP models of the Johansen class, in which all elasticities are usually assumed (calibrated) to be given or

known *a priori* and the impact of endogenous or endogenised variables (say T) on Y is dependent on the exogenous variables and calculated system-wise using such iterative procedures as the Gauss-Euler algorithm with a known sparse matrix of elasticities.

For estimation, it can be verified that our so-called flexible (or function-free) growth and trade equations (3)-(4) in the simultaneous-equation model for endogenous growth and trade above are econometrically identified in the sense of mathematical consistency. An impact study of exogenous ODA (or endogenous T or exogenous X and W) on growth can be analysed directly via its 2SLS (or reduced-form adjusted) or instrumental-variables (IV) estimation or indirectly via its reduced-form estimation in terms of all the exogenous economic and non-economic variables in the model. It is well-known in the pure theory of econometrics that the use of OLS to estimate equation (3) for example will, in this case, produce biased parameter estimates and subsequent incorrect policy prescriptions. An important feature of our modelling approach adopted above is that, contrary to the CGE/GTAP restrictive (and goods only) and so-called confirmatory approach (i.e., the causal functional relations are *a priori* fixed and the values of elasticities are assumed or subjectively given — see also Kydland 2006, for a requirement of data-based calibration for credible policy analysis), our impact study is historical-data-consistent as all required elasticities are estimated from the model and from available official data and have asymptotically and statistically desirable and consistent properties (an important issue in empirical applications — see Frankel and Romer, 1999) when suitable estimation and forecasting methods (e.g., 2SLS or other IV methods such as the 3SLS) are employed.

Another important feature is that, contrary to other SNA93-based or Keynesian system-wide modelling approaches, our impact study has the general flexibility in modelling specification rationale and implementation in assuming explicitly no *a priori* functional forms (e.g., linear, log, log-linear) for the equations in the model (for the relevance of this approach in preferred applied modelling, see Minier, 2007), and it can handle data on trade or budget deficits (having therefore negative values) and real rate of interest when

inflation exceeds the nominal interest rate. The usual method of routine log transformations for all variables in a single or multi-equation econometric model cannot do this. It is interesting to note that, from our model's construct, the impact may be regarded as long run in the context of Engel-Granger (1987) co-integration or long run causality if all variables in the equations are integrated of degree one or as short run in the context of Granger (1969) causality if they are all integrated of degree zero.

4. EMPIRICAL IMPLEMENTATION OF THE MODEL AND SUBSTANTIVE FINDINGS

4.1. Data

In addition to the CLMV's key economic and trade variables mentioned in section 2 earlier, X in the trade equation (4) includes conventional terms of trade and real exchange rates. Data for the estimation were obtained from the OECD (2017), UNCTAD (2017) and USDA-ERS (2017) databases. For consistency with previous studies, all economic and trade data are in real value or equivalently. In our study, all original data are obtained as annual and then transformed to their ratios (when appropriate). The ratio variables include merchandise trade, FDI, services and ODA. Other non-ratio variables include population (a gravity factor proxy), terms of trade, real exchange rates, and qualitative variables representing the occurrence of the economic, financial and other major crises, policy shift or reforms over the period 2001 to 2015 (where all required data for modelling estimation were continuously available) in the CLMV. The qualitative binary variables reflect, in a conventional manner, the major domestic, regional and global event dates with the assumption of long-term non-decaying effects on the CLMV's growth and trade. All non-binary variables are then converted to their percentage rate of changes. The use of this percentage measurement (which is equivalent to log-difference for small changes) is a main feature of our policy modelling and

impact approach and avoids the problems of *a priori* known functional forms (see above) and also of logarithmic transformations for negative data (such as budget (fiscal), real interest rates or current account deficits). As the required GDP data for CLMV's major trading partners are difficult to incorporate due to their potential multicollinearity and our limited available sampling size, we have focused on the world GDP as a proxy GDP for all CLMV countries' trading partners. In addition, we assume a unidirectional direction of trade-and ODA-to-growth below in a 'dual' context, that is, Japan's ODA and CLMV's world trade (in goods, FDI and services) and their causal impact on CLMV's growth and trade. Major reforms and crises and economic variables that had been identified or assumed as exogenous and affecting each of the CLMV's growth and trade are listed in their empirical findings tables below.

4.2. The Estimated Models

To provide insights into Japan's ODA and the various key contributing factors to growth and trade in the CLMV countries, four complete models of endogenous growth and trade (3)-(4) have been estimated by the 3SLS separately for each of these countries using the data for the period 2001-2015 (the complete data are only available for this period). The basic findings are reported in tables 1-4 below. The models are identified according to the order identification tests, and all percentage variables have been found to be statistically stationary according to the augmented Dickey-Fuller unit root tests. The modelling performance of the estimated models as measured by Kydland (2006) data-model compatibility or simply 'empirical fit' criterion is given graphically in figures 6-9 and their statistical characteristics by Theil-MSE decomposition are given in tables 5-6 for the four CLMV countries respectively. As assessed by these various modelling diagnostics, all the estimated models perform very well in emulating the volatile movements, peaks and troughs, especially the turning points of the growth and trade data for the CLMV over the sample period. All models' residuals (except Laos' trade) have also been tested for evidence of unit roots and found to be

statistically stationary. In addition, in all models, the R^2 and DW values appear acceptable and show no first-order autocorrelation problem. The following discussions and their credibility are based on these empirical findings. Policy implications are discussed in section 5.

4.3. General CLMV Findings

On the main question in our economic integration-based study about the impact of Japan's ODA (which is considered part of the recipients' capital inflows) on the CLMV countries, we note two general important features in the empirical findings reported in tables 1-4. First, the impact is almost universally statistically weak on both growth and also trade in these countries. Second, the magnitude and direction of the impact are diverse between these countries and also in each CLMV country. The first feature lends support from our economic integration approach to the findings of the large amount of previous qualitative and quantitative studies on the lack of effectiveness of foreign aid by donors (DAC and non-DAC) in promoting recipient developing countries' growth and on their possible contributing factors (e.g., Sachs, 2005; Rodrik, 2006; Easterly, 2006, 2007; IMF, 2007; Krueger, 2007; Rajan and Subramanian, 2007; Tran, 2007a, 2007b; EIC, 2016). In these studies, the possible key contributing factors to ODA ineffectiveness that have been put forward include a lack of appropriate governance and, of current interest, of suitable local human resources leading to the need of ODA for improved education and training. In addition, the general lack of a strong positive effect of Japan's ODA on the CLMV's trade indicates potentially that this foreign aid deeply has long-term effects and had not been concerned mainly with the CLMV trade-related activities (e.g., aid for trade) and perhaps needs a rethink or re-orientation. The second feature is of interest particularly because it brings out the important difference in economic structure and management between the CLMV countries and this should be seriously taken into account by all donors or foreign aid agents to develop appropriate ODA policy and implementation for the region.

As mentioned earlier, even as the CLMV countries have joined the global economy and achieved great economic and trade benefits and poverty reduction in recent years, the findings from tables 1-4 show however that the gains from regional economic integration through specifically liberalised commodity trade, FDI and services have been generally statistically weak or not even been uniformly beneficial to growth and especially trade. The good performance of the CLMV countries' more stable growth and volatile trade as observed in figures 1-2 during 2001-2015 may, in this case, be attributed to some extent to other contributing factors such as good domestic policy reforms, and in combination with benevolent (and attenuated by) regional and global developments (Tran, 2002b). Some of these significant domestic reforms and regional and global developments that had simultaneously affected CLMV growth and trade as stipulated by Johansen (1982) and empirically implemented by Tran (2004, 2007a, 2007b) in policy modelling have been identified and listed as instrumental variables in tables 1-4 for the four CLMV countries.

4.4. Country-Specific Findings

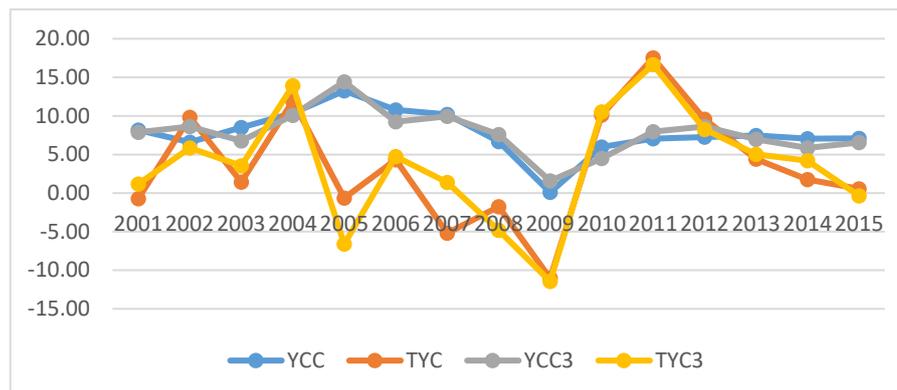
CAMBODIA: The findings reported in table 1 for Cambodia show that, despite being the second largest recipient on average of Japan's ODA/GDP in the CLMV of 1.46%, only a weak beneficial impact of Japan's ODA on the country's growth and trade was noted. For growth, principal RTA factors such as trade (openness) and FDI appeared however to have contributed significantly to growth but services seemed on the other hand to have weakly negative effects. Cambodia's growth had been significantly affected however by major global crises such as the GFC in 2009, the world recovery in 2011, and the country's continuing development path. For trade, the crowding-out effect of domestic demand and the importance of the trading partners' demand were highly significant. Real exchange rates and terms of trade appeared to have adverse effects on trade. Cambodia's trade had declined in its development path and was not significantly affected by the GFC but by the

Table 1 Japan's ODA and Cambodia's Growth and Trade, 3SLS Estimates, 2001-2015

Variables	Growth	Trade/GDP
Const	8.666**	37.893**
Trade/GDP	0.093*	
FDI/GDP	0.039**	
Services/GDP	-0.007	
ODA/GDP	0.001	0.044
Post-Terrorist Attacks 2002	-0.467	
Strategic Plan 2004		15.810**
Strategic Plan 2005	0.219	
GFC 2009	-6.203**	-11.533
Post GFC Recovery 2011	4.632**	25.824**
Domestic Demand		-5.290**
Trade Partner Demand		7.676**
Real Exchange Rates		-0.445
Terms of Trade		-0.433*
Post- Euro Crisis 2014		-5.549
RSQ	0.829	0.842
DW	2.561	2.649
DF <i>p</i> -value	0.984	0.527

Notes: For tables 1-4, *=significant at 10% level, **=significant at 5% level, RSQ=R-squared, DW=Durbin-Watson statistic, DF *p*-value=Dickey-Fuller unit root test *p*-value for the estimated model's residuals.

Figure 6 Modelling Cambodia's Growth and Trade with Japan ODA, 2001-2015



Note: For figures 6-9, YC. and TY. (with .=C, L, M, and V) denote country growth and trade respectively, and YC.3 and TY.3 their 3SLS estimates.

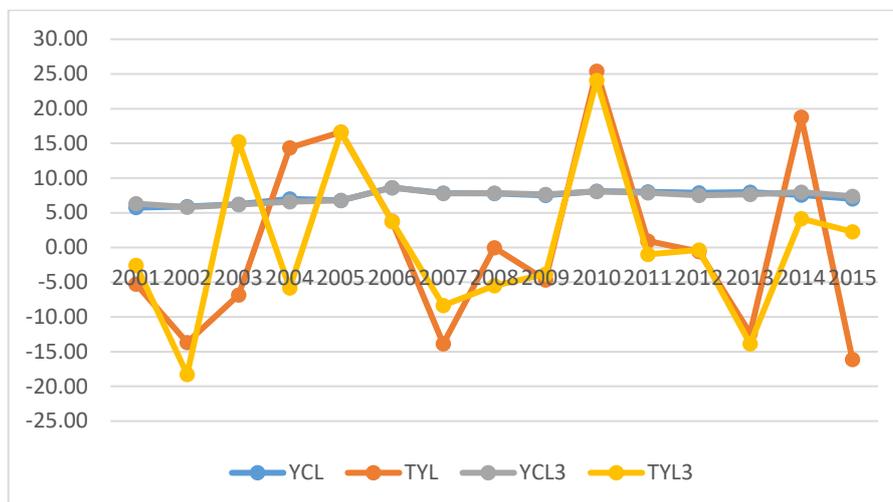
world post-GFC recovery.

LAOS: Being the largest recipient of Japan's ODA/GDP of 2.04% on average among the CLMV during 2001-2015, this foreign aid, from table 2, had however no impact on the country's growth but interestingly contributed about 0.238% and at the 10% significance level to its trade expansion. For growth, all three key determinant components of the RTA theory (i.e., commodity trade, FDI and services) had beneficial impact on Laos's growth but only FDI is highly significant. This confirms the importance and success of relevant FDI and its distribution and implementation in Laos. The GFC did not significantly impact on Cambodia's growth but the country's reform policy of 2006 did. For trade, the crowding-out effect of domestic demand and the importance of trading partners' demand were confirmed but only very weakly. Real exchange rates and terms of trade had unexpectedly adverse effects on trade. Trade was negatively affected by the terrorist attacks in 2001 but

Table 2 Japan's ODA and Laos's Growth and Trade, 3SLS Estimates, 2001-2015

Variables	Growth	Trade/GDP
Const	6.303**	161.073
Trade/GDP	0.013	
FDI/GDP	0.002**	
Services/GDP	0.011	
ODA/GDP	-0.004	
Post-Terrorist Attacks 2002		-43.823*
Growth Strategy 2005	0.410	46.687**
Development Plan 2006	1.579**	
Crisis 2007		-22.562
GFC 2009	0.292	44.687*
Post GFC Recovery 2010		11.848
Domestic Demand		-19.690
Trade Partner Demand		3.444
Real Exchange Rates		-4.997**
Terms of Trade		-0.084
Trend	-0.064	-5.814
RSQ	0.894	0.406
DW	1.270	2.865
DF <i>p</i> -value	0.335	0.0008

Figure 7 Modelling Laos' Growth and Trade with Japan ODA, 2001-2015



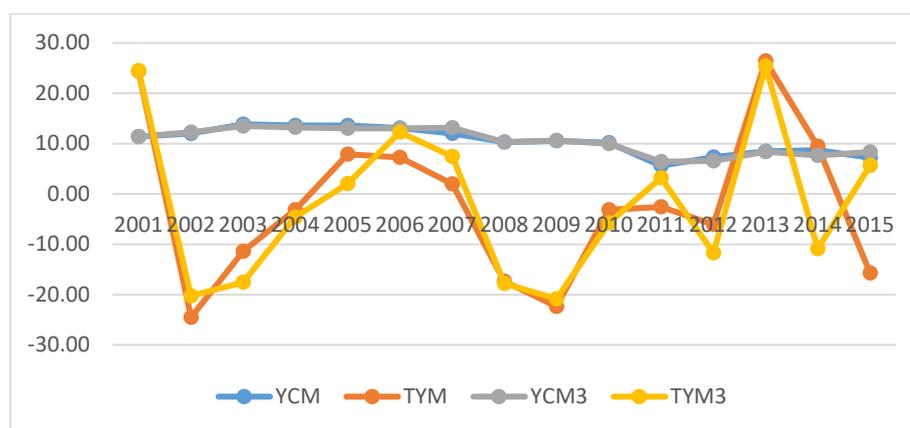
reforms in 2005 and the GFC had statistically beneficial impact on Laos' trade.

MYANMAR: Myanmar was the least recipient of Japan's ODA into the CLMV with an annual average of 0.55% during 2001-2015. In spite of this, from table 3, this foreign aid had some positive impact on both growth and especially trade (openness). While the impact on growth was negligible at 0.0003 with a p -value of 0.604, the impact on trade was much larger at 0.015 with a very small p -value of 0.002. For growth, unlike the case of Laos, the three key RTA determinant components were found to have a dampening effect on Myanmar's growth. All their three elasticities are however statistically insignificant. We also note the early effects of the GFC (2008) and the late global recovery (2013) on this growth. For trade, like the case of Cambodia, the crowding-out effects of domestic demand and the importance of Myanmar's trading partners' demand on trade were found statistically significant. Real exchange rates and terms of trade were also found to have the correct sign but statistically insignificant. Myanmar's trade was found to be affected by major domestic reforms, the post-GFC (2010) and the late global recovery in 2013.

Table 3 Japan's ODA and Myanmar's Growth and Trade, 3SLS Estimates, 2001-2015

Variables	Growth	Trade/GDP
Const	11.812**	60.091**
Trade/GDP	-0.021	
FDI/GDP	-0.000	
Services/GDP	-0.001	
ODA/GDP	0.0003	0.015**
Economic Plan 2002		-36.537**
Economic Plan 2003	1.366**	
Economic Plan 2005		10.450*
Pre-GFC 2008	-3.075**	
GFC 2009		68.505*
Euros Crisis 2010		-91.914**
Post-Euro Crisis 2011	-3.763**	
Post-Euro Crisis 2012		-1510.33
FESR 2013	1.633**	1511.64
Domestic Demand		-5.755**
Trade Partner Demand		6.772**
Real Exchange Rates		0.129
Terms of Trade		0.369
RSQ	0.941	0.692
DW	2.373	2.448
DF <i>p</i> -value	0.131	0.196

Figure 8 Modelling Myanmar's Growth and Trade with Japan ODA, 2001-2015



VIETNAM: Vietnam was the third largest recipient of Japan's ODA/GDP in the CLMV with an annual average of 0.94%. The findings reported in table 4 were mixed in relation to the impact of this foreign aid on the country. First, as opposite to the case of Laos, Japan's ODA to Vietnam appeared to have positive but weak effect on Vietnam's growth, but it had negative and highly significant impact on Vietnam's trade (openness). A detailed analysis of Japan's ODA, its supported projects, its disbursements and implementation and domestic governance in Laos and Vietnam may be able to provide useful insights about the difference. Trade and FDI did have positive impact on Vietnam's growth but the findings were weakly significant for trade. This growth had been however affected by the GFC and reforms but only very weakly. For trade, unlike other CLMV countries such as Cambodia and Myanmar, the crowding-out effects of domestic demand weakly existed, and

**Table 4 Japan's ODA and Vietnam's Growth and Trade,
3SLS Estimates, 2001-2015**

Variables	Growth	Trade/GDP
Const	7.158**	17.433
Trade/GDP	0.037*	
FDI/GDP	0.014	
Services/GDP	-0.001	
ODA/GDP	0.004	-0.113**
Iraq War 2003		10.639**
5-Yr Plan/Strategy 2005	-0.519	-0.256
5-Yr Plan/Strategy 2007		9.408**
GFC 2009	-0.971	-56.012**
End of 5-Yr Plan 2010		48.860**
Euro Crisis 2012	-0.885*	-10.474**
Post-Euro Crisis 2013		-1.041
Post-Euro Recovery 2014	0.634	
Domestic Demand		-0.121
Trade Partner Demand		-4.764**
Real Exchange Rates		-2.421**
Terms of Trade		-0.734**
RSQ	0.757	0.993
DW	1.967	2.820
DF <i>p</i> -value	0.076	0.398

Figure 9 Modelling Vietnam's Growth and Trade with Japan ODA, 2001-2015

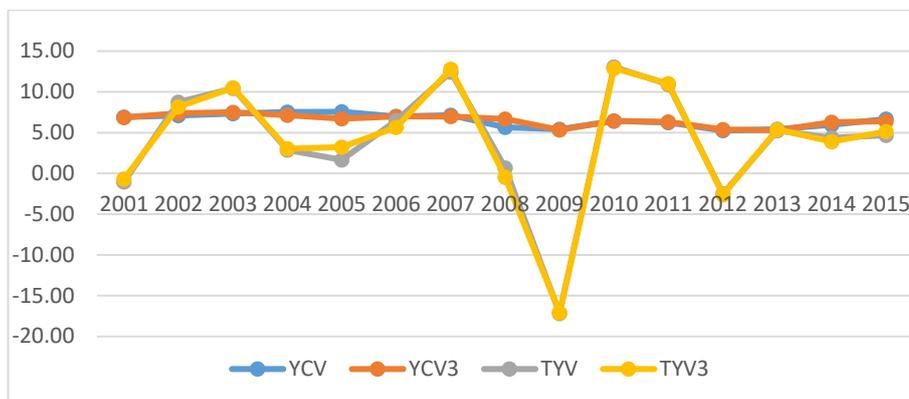


Table 5 Friedman-Kyland Modelling Performance, Statistical Characteristics of Estimated Models of Growth and Trade, 2001-2015 Theil-MSE Decomposition

	Cambodia				Laos			
	Growth		Trade		Growth		Trade	
	Data	Model	Data	Model	Data	Model	Data	Model
Mean	7.769	7.769	3.470	3.470	7.335	7.335	0.441	0.441
Stand Dev.	2.914	2.856	7.346	7.456	0.862	0.808	13.045	11.355
RSQ	0.829		0.842		0.895		0.406	
MSE	1.391		8.457		0.073		102.981	
Mean Error	0.000		0.000		0.000		0.000	
Bias	0.000		0.000		0.000		0.000	
Variance	0.002		0.002		0.036		0.026	
Covariance	0.998		0.998		0.964		0.974	

Note: For tables 5-6, RSQ=R-squared, MSE=mean-squared error, Bias+Variance+Covariance= 1 (Pindyck and Rubinfeld, 1998).

the increase in its trading partners' demand highly dampened unexpectedly Vietnam's trade. Real exchange rates and terms of trade were found to have significantly impeded trade expansion. Vietnam's trade were benefited by the country's WTO membership in 2007, but badly affected by the GFC and the effects of the lingering euro crisis. It benefitted significantly however from the post-GFC recovery.

Table 6 Friedman-Kyland Modelling Performance, Statistical Characteristics of Estimated Models of Growth and Trade, 2001-2015
Theil-MSE Decomposition

	Myanmar				Vietnam			
	Growth		Trade		Growth		Trade	
	Data	Model	Data	Model	Data	Model	Data	Model
Mean	10.509	10.508	-1.935	-1.936	6.504	6.504	4.053	4.053
Stand Dev	2.600	2.537	15.319	15.160	0.803	0.709	7.586	7.569
RSQ	0.941		0.692		0.757		0.993	
MSE	0.373		73.029		0.146		0.364	
Mean Error	0.000		0.000		0.000		0.000	
Bias	0.000		0.000		0.000		0.000	
Variance	0.010		0.000		0.058		0.001	
Covariance	0.990		1.000		0.942		0.999	

5. CONCLUSIONS

In the previous section, we have described the empirical findings from our simultaneous multi-equation model of endogenous growth-trade and exogenous ODA specifically under the economic integration (expenditure) framework to study the question: the impact of Japan's ODA (savings-supplemented or capital inflows) on the CLMV countries. We have avoided discussion of the donor and development policies and domestic reforms that may explain the patterns or movements of the key modelling variables over time in each of the CLMV countries (see further detail in Mikishima, 2010; Pan, 2014; ADB, 2017; WB, 2017) and of the self-evident relevance of various regional and global (external) crises that have simultaneously affected growth and trade in these countries. Our objectives are simply to provide causal analysis of the various key variables in a model appropriate for the study and for possible use in ODA policy development and evaluation by donors in the focus region, namely the CLMV.

A number of policy implications of our findings can be derived for the CLMV as a whole or for a single country separately but their main points can

be summarised as follows. First, they point out the lack of uniform effectiveness of Japan's ODA in promoting growth and, also for the first time, trade (with relevance to aid for trade) in the CLMV. The implications are consistent with numerous previous related studies in the literature (cited above). Second, they point out the importance of the different economic structure, governance, suitable human resources, opening-up reform policies and the contagion of regional and global crises in each of the CLMV countries that have to be taken into account in a suitable country-specific impact study with meaningful outcomes. Third, they show that while the RTA objectives of liberalisation of commodity trade, FDI and services (and related capital inflows, ODA) are to promote growth or development and openness, this liberalisation for the countries in the CLMV bloc has produced only mixed results in the 2001-2015 period. In addition to the reasons proposed to explain this finding by numerous previous well-known and related studies (see also Elavah, 2016), it can be advanced that Japan's ODA, like other ODAs, to support hard and soft infrastructure projects in the CLMV has long-term effects that had been transmitted pervasively necessarily via various interrelated sectors to the economy. These effects can be appropriately modelled by supply side determinants or by CGE scenario simulation study. The effectiveness of Japan's ODA should be assessed more appropriately by this long-term perspective. Another argument can be put forward is that the CLMV's geo-political and economic condition had not allowed them to fully benefit from the recently adopted RTA and ODA policy.

In summary, the CLMV countries have, in recent years, integrated into the global economy, achieving high growth and living standard and liberalising trade. Being the poorer members of the ASEAN and other related RTAs with underexplored bountiful natural and human resources, the CLMV have also received large ODA from OECD-DAC and especially from Japan to assist their development programs to meet the United Nations sustainable development objectives. The paper has developed an econometric model for the first time consistent with the RTA framework to study especially the impact of Japan's ODA (regarded as savings-supplemented or capital inflows)

not only on growth but also on trade of the CLMV countries. Empirical findings with policy relevance to Japan's ODA, RTA policy, and domestic reform and crisis management were obtained and analysed for policy recommendations, and compared with previous related studies for robustness. The findings provide useful short-run demand side evidence to informed debate and also to complement related impact studies by alternative approaches such as the CGE and supply side consideration. A similar study for Korea's ODA or China's ODA in the CLMV that have grown in importance in recent years would be of both academic and policy interest for regional comparison analysis.

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