



Analysis Determinant Factors Effect on Migrant Workers' Remittances Flow to the CLMV Countries

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ABSTRACT

This paper aims to investigate the determinant macroeconomic variables and non-economic factors influencing the migrant workers' remittances flow to the Cambodia, Laos, Myanmar, and Vietnam (CLMV) countries. This study employs fixed-effect and random-effect models to analyze the panel data set over the periods of 16 years (2000-2015). The results show that the gross domestic product (GDP) per capita of origin country, the official exchange rate of the home country, and political stability index of home country are significant negative effects on remittances inflow to the CLMV countries. Higher number of migrants to the home country's population increase the remittances inflow to the home countries. Majors of most host country's GDP per capita (Japan, South Korea, and Singapore) are positive effects on the remittances, except for the Thai's GDP per capita. All dummy variables show expected results.

Keywords: Cambodia, Laos, Myanmar, and Vietnam, Macroeconomics, Remittances

JEL Classifications: E01, E31, N15, N35, C22, O53, F22, F24

1. INTRODUCTION

Remittances become the second largest external financing sources after foreign direct investment for fueling economic development, especially for developing countries. Over the last decade, a large amount of remittances inflow to developing countries sent by migration workers have risen steadily. Globally, about 70% of remittances flow to developing countries. Particularly, the official recorded remittances flew to developing countries \$US 431.6 billion in 2015, an increase of 0.4% over \$ 430 billion in 2014 (World Bank, 2016).

Cambodia, Laos, Myanmar, and Vietnam (CLMV) is a group of developing countries in Southeast Asia which have a total population about 168 million population (27% of the whole ASEAN population) with an average gross domestic product (GDP) growth rate 7% in 2015. Over the last 16 years (2000-2015) remittances inflow to CLMV countries had a total amount of \$US 110 billion. Remittances inflows to CLMV slightly increased from \$US16 billion (6% of CLMV's nominal GDP) in 2014 to \$US17 (7% of CLMV's nominal GDP) in 2015 (The World Development Index, 2015).

Many studies review that remittances help the economic development in both developed and developing countries. Remittances are linked with fostering human development across number of areas such as health, education and gender equality, as well as increasing income for individual and families (Ratha, 2007). It also stimulates the economic growth by enhancing entrepreneur activity, improving labor productivity, and triggering consumption and investment. Moreover, it helps to alleviate poverty, debt, and income inequality through raising the income for poor people (Vargas-Silva et al., 2009) (Adams and Page, 2005). Besides these, an increasing number of studies find that remittances are positive impact on economic growth as exemplified in the works of Giuliano and Ruiz-Arranz (2009), Kumar (2013), Marwan et al. (2013), Bayar (2015), Tahir et al. (2015), Nwaogu and Ryan (2015), and Karamelikli and Bayar (2015); while some studies indicate that remittances are negative effect on economic growth (Hassan et al., 2016), (Jouini, 2015), (Parinduri and Thangavelu, 2011).

As the role of remittances become more important in the economic development, however, there is inadequate study for CLMV

countries. This paper employs the fixed-effect and random-effect model to examine the determinant factors influencing the worker's remittances inflow to the CLMV countries. This study will contribute to the international immigration literature reviews in the case of the developing countries, as well as help to assist the policy makers to establish the right policies.

2. LITERATURE REVIEW

There are vastly studies to explore macro-and micro determinants influencing remittances flow to both developed and developing countries using various econometric analysis tools, namely gravity model, fixed- and random-effect models, pooled ordinary least squares, autoregressive distributed lag, pedroni panel cointegration and FMOLS, panel granger causality, vector error correction model granger causality, Johansen and Juselius co-integration technique, pooled mean group regression, general moment method, ordinary least square regression, U-shaped curve, binary Logit model, Tobit model, variance decompositions, and impulse response functions. These studies use both qualitative and quantitative data for analyzing the determinant impacts on remittances.

Many recent studies use quantitative macroeconomic variables to find factors influencing on remittances. Like, Tabit and Moussir (2016) study the macroeconomic determinants of migrants' remittances for 22 developing countries over the period of 1990-2014. This study indicates that the origin country's GDP, the host country's GDP, inflation, financial development and institutional quality are significant effects on personal remittances, while the migrant stock, the official exchange rate and the real interest rate in the country of origin do not influence on the remittances. Vargas-Silva and Huang (2006) examine the determinants of worker's remittances. They emphasize that remittances respond more to the changes in the macroeconomic conditions of the host country, than to the changes in the macroeconomic conditions of the home country. On the other hand, Kosse and Vermeulen (2014) investigate the determinants in migrants' choice of payment channel when transferring money to relatives abroad. The study shows that education, cost, access, and financial development in the home country are the main determinants, while general cash preferences and internet banking usage play a limited role. The researchers also emphasize the financial education, cost reduction, and increasing financial inclusion may serve a valuable role to increase the use of formal channels. Havolli (2009) finds the main determinants of remittances. He finds that business environment are significant determinants of remittances. He suggests that the policy makers should improve the business environment by investing in infrastructure, fight corruption, etc., in order to motivate migrant workers to remit more. Goschin and Roman (2012) use both qualitative and quantitative data to investigate the selected economic, social and demographic factors that impact on the remittance behavior of Romanian international migrants. The study finds that the remittances are strongly impacted by migrant's income, return intention and presence of the spouse in the destination country. Singh et al. (2009) investigate the determinants and the macroeconomic role of remittances in Sub-Saharan Africa. This paper finds that countries with well-functioning domestic institutions seem nevertheless to better at

unlocking the potential for remittances to contribute to faster economic growth, even though the effect of remittances in growth regression is negative. Hasan and Hashmi (2015) investigate the determinants of worker remittance of Bangladesh. The results show that any changes in the number of labor force, consumer price index (CPI), export, import, government expenditure and devaluation or appreciation of host countries currency can impact on the inward remittance income of Bangladesh.

Moreover, there are many other papers focusing on the microeconomic factors that influence the worker's decision-making to transfer and/or the remit amount of money to their country of origin. Bouoiyour and Miftah (2015) explore the relationship between international migration and education attainment levels. Their study support the altruistic hypothesis that remittances are sent to households with low levels of welfare, and migrant worker's decision to remit is related to individual characteristics such as migrant income, gender and age. Dustmann and Mestres (2010) study the remittance behavior of immigrants and how it relates to temporary versus permanent migrant plans. The study shows that the changes in return plans are related to large changes in remittance flows. Mugumisi (2014) examines micro-economic determinants of remittances flow to Zimbabwe. The study shows that the older age and more educated migrants are more likely to remit to home countries. And single migrants were less likely to remit compared to those who divorced, while married migrants are less likely to remit than divorced migrants. Also, many other empirical research papers study on the microeconomic determinants affecting on remittances including Holst and Schrooten (2006), Agarwal and Horowitz (2002), Olowa and Awoyemi (2012), and Barnett (2011).

Furthermore, majority of studies uses time series data to measure the relationship between remittances and economic growth. Bayar (2015) uses causality test proposed by Dumitrescu and Hurlin (2012) to examine the causal relationship among the real GDP per capita growth, personal remittances received and net foreign direct inflows of some European countries. The study finds that there is unidirectional causality from remittances and foreign investment inflows to the economic growth. Marwan et al. (2013) uses the Johansen co-integration technique within the augmented Solow-model approach to examine the role of export, foreign development aid and remittance inflows in relation to economic growth in Sudan. The study finds that there is a long run positive relationship between remittance and economic growth. Tahir et al. (2015) examine the relationship between external determinants and economic growth of Pakistan economy. The study finds that foreign remittances have a significant role in the growth process of Pakistan economy. Apart from aforementioned studies, many current studies explore the associations between remittances and economic growth including Bayar (2015), Lim and Simmons (2015), Karamelikli and Bayar (2015), Najibullah and Masih (2015), Nwaogu and Ryan (2015), Goschin (2014), Kumar and Stauvermanna (2014), Ramirez (2013), Kumar (2013), Ahamada and Coulibaly (2013), and Driffield and Jones (2013).

2.1. Data Collection

The study mainly focuses on the determinants of worker's remittances for a panel of CLMV region by using annual data

covering from 2000 to 2015. The dependent variable is the migrant worker's remittances measured by personal remittance as percentage of GDP. The independent variables are GDP per capita of the home country, domestic inflation rate (INFR) measured by the CPI in the percentage change, number of migrant to population of the home country represented by the international migrant stock, official exchange rate of the home country measured by US dollar per home currency unit, political stability index which is used as the proxy of institutional quality of the home country, and GDP per capita of seven different host countries (namely, Thailand, Malaysia, Korea, Singapore, Japan, the United States of America, and France), which are the top destinations of the migrants from the CLMV region. The data of all variables in this paper are obtained from the World Development Index, CEIC Database Manager, and www.theglobaleconomy.com. The dummy variable is used by setting 1 to represent the period of events happened and the periods used in the dummy variable are set by the authors' observation of each event.

3. METHODOLOGY

Fixed-effect and random-effect models are used in this paper in the purpose of scrutinizing the determinant factors effect on migrant worker's remittance flow to the CLMV region. These econometric models are conducted based on the empirical related studies of Tabit and Moussir (2016), Adenutsi (2014), and Rahman and Abdul (2014).

The estimation of migrant workers' remittances toward the CLMV region can be written in the below semi-logarithm equation:

$$PRR_{i,t} = f(LYKH_{i,t}, INFR_{i,t}, NMPO_{i,t}, OEXC_{i,t}, PSI_{i,t}, LYH1_{i,t}, \dots, LYH7_{i,t}, D1, \dots, D5)$$

Or,

$$PRR_{i,t} = \alpha_0 + \beta_1 LYKH_{i,t} + \beta_2 INFR_{i,t} + \beta_3 NMPO_{i,t} + \beta_4 OEXC_{i,t} + \beta_5 PSI_{i,t} + \beta_6 LYH1_{i,t} + \beta_7 LYH2_{i,t} + \beta_8 LYH3_{i,t} + \beta_9 LYH4_{i,t} + \beta_{10} LYH5_{i,t} + \beta_{11} LYH6_{i,t} + \beta_{12} LYH7_{i,t} + \gamma_1 D1 + \gamma_2 D2 + \gamma_3 D3 + \gamma_4 D4 + \gamma_5 D5 + \varepsilon_{i,t}$$

Where,

α_0 = The common term of the constant;

β = The parameters of independent variables;

γ = The parameters of dummy variables;

$PRR_{i,t}$ = Personal remittance of migrant workers received as a percentage of GDP;

$LYKH_{i,t}$ = GDP per capita of the home country as in logarithm form;

$INFR_{i,t}$ = Inflation rate of the home country;

$NMPO_{i,t}$ = Number of international migrant to the population of the home country;

$OEXC_{i,t}$ = Official exchange rate of the home country;

$PSI_{i,t}$ = Political stability index of the home country (institutional quality);

$LYH1_{i,t}$ = GDP per capita of the host country (Thailand), as in logarithm form;

$LYH2_{i,t}$ = GDP per capita of the host country (Malaysia), as in logarithm form;

$LYH3_{i,t}$ = GDP per capita of the host country (Korea), as in logarithm form;

$LYH4_{i,t}$ = GDP per capita of the host country (Singapore), as in logarithm form;

$LYH5_{i,t}$ = GDP per capita of the host country (Japan), as in logarithm form;

$LYH6_{i,t}$ = GDP per capita of the host country (USA), as in logarithm form;

$LYH7_{i,t}$ = GDP per capita of the host country (France), as in logarithm form;

D1 = The military coup in Thailand during 2006-2007 and 2014-2015 (D1 = 1 in the period of 2006-2007 and 2014-2015, and D1 = 0 = otherwise);

D2 = The global financial crisis during 2008-2010 (D2 = 1 in the period of 2008-2010, and D2 = 0 = otherwise);

D3 = The Tsunami and Fukushima nuclear plants in Japan during 2011-2012 (D3 = 1 in the period of 2011-2012, and D3 = 0 = otherwise);

D4 = The Tsunami in Southeast Asia during 2004-2005 (D4 = 1 in the period of 2004-2005, and D4 = 0 = otherwise);

D5 = The middle east respiratory syndrome (MERS) coronavirus in 2015 (D5 = 1 in 2015, and D5 = 0 = otherwise).

To examine the determinant factors of migrant worker's remittances, the individual effects which are possible correlated with explanatory variables are allowed to be used in the model.

$$\varepsilon_{i,t} = \lambda_i + \gamma_{i,t}$$

Where, $\varepsilon_{i,t}$ is an idiosyncratic error term, λ_i is an unobserved country specific effect which varies across countries but it is consistent within a country over time, and $\gamma_{i,t}$ is a white noise residual term. To eliminate the unobserved individual effects problem, estimation in panel data by utilizing fixed-effect or random-effect model to omit the individual effect is a standard estimation technique. Fixed effects model assumes that each country has an individual unobserved country specific effect and then estimates the constant term for each country by using the deviation from individual average to remove the persistent variance. Random effects model assumes that the individual specific effects are random. Then, it indicates that the explanatory variables and the residual term related with these effects are uncorrelated. To address of which is the most appropriate model in the study between fixed effects and random effects model. Hausman test is utilized for determining the appropriate model (Tabit and Moussir, 2016, Hor and Thaiprasert, 2015).

4. RESULTS AND DISCUSSION

The results (Table 1) from panel analysis using fixed and random effects model, provide similar outcomes. Random effects model is the most appropriate in this study judged by Hausman test. The scrutiny of the findings reveals several facts. The macroeconomic situation of the home countries, number of migrants, official exchange rate of the home countries, political stability index, and four among seven host countries are found to be the factors effecting on the flow of migrant workers' remittances. However, some factors contain positive effects, while other factors contain negative effects on the workers' remittance inflows.

Table 1: Results of panel data analysis, using fixed-effect and random effect models

Dependent variable: PRR	Fixed effects model	Random effects model
LYKH	-2.0590*** (0.0000)	-1.9801*** (0.0000)
INFR	-	-
NMPO	4.2448*** (0.0000)	3.9977*** (0.0000)
OEXC	-23.6429*** (0.0000)	-23.3722*** (0.0000)
PSI	-0.7061** (0.0225)	-0.6903** (0.0233)
LYH1	-15.1498*** (0.0000)	-15.1870*** (0.0000)
LYH2	-	-
LYH3	15.9779*** (0.0000)	15.8877*** (0.0000)
LYH4	5.9675*** (0.0000)	5.7337*** (0.0000)
LYH5	7.6106*** (0.0037)	7.9137*** (0.0040)
LYH6	-	-
LYH7	-	-
D1	-	-
D2	0.3192*** (0.0000)	0.3109*** (0.0000)
D3	-	-
D4	-	-
D5	0.5779*** (0.0003)	0.5779*** (0.0003)
C	-160.0782*** (0.0000)	-160.0507*** (0.0000)
R ²	0.9500	0.7256
S.E. of regression	0.5826	0.6016
F-statistic	73.0884	14.0132
Prob (F-statistic)	0.0000	0.0000
Hausman test		Chi-square 0.0000*** (1.0000)

The values in parentheses are the P values. “***” and “**” represent the statistical significance levels at 10%, 5%, and 1%, respectively

The GDP per capita of the origin country (LYKH) is significant with the negative sign. This indicates that the migrant workers are motivated by altruism to remit more money to their families during the home countries' economic problems in order to protect their family from unusual lower family's incomes. The INFR is insignificant to be a factor of remittances flow to the CLMV region. The result is treated as inconclusive and consistent to the findings of Kalule (2010) and (Nabi, 2011). The number of migrants to the home countries' population (NMPO) is significantly positive impact on the remittances flow to the CLMV region. This implies the level of remittances from abroad is positively correlated with an increasing of international workers; meaning that higher stock of migration workers induces higher flow of remittances to the recipient country. The current finding is consistent to the study of Tabit and Moussir (2016) and Singh et al. (2009).

The official exchange rate of home country is statistically significant and negative impact on the remittances flow to the CLMV countries. It elucidates that the migrant workers possibly delay or reduce the remittance to their home countries to avoid losing in exchange rate during the currency appreciation which denotes strong economic condition of home countries. On the contrary, they might remit more to profit from exchange rate depreciation which indicates adverse economic situation of home country. The result is in line with the papers of Singh et al. (2011) and Van Eyden et al. (2011). Furthermore, political stability (PSI) is significantly negative effect on the remittances. It implies the better political condition of the recipient country probably produces lower altruism motives of the migrant workers to remit more money to their families. In *vice-versa*, the altruism motivates

the migrant workers to remit more to their families to overcome the difficulty and necessity during the turmoil.

The GDP per capita of host countries (Korea, Singapore, and Japan) are positively significant impacts on the remittances flow to the CLMV countries. The study shows income in these countries and workers' remittance flows move at the same direction. Malaysia's GDP per capita (LYH3) is positive but insignificant effects on the remittances inflow to the CLMV region. Possibly, the effect of this economy is too small influencing to the remittances. On the other hand, as an unexpected result of the Thai's GDP per capita (LYH1) presents significantly negative effects on the remittances inflow to the CLMV countries. This result is seemingly consistent to Katseli and Glytsos (1989). Our empirical findings indicate that the migrant workers send more funds to their home country while the economy or income in Thailand is facing recession. The result is possibly due to the military coup and financial crisis awaking during the studied period. The recession encourages the migrants to remit more money to their home country to avoid losing from the turmoil. The military coup in Thailand is insignificant effect on the remittances inflows to the region, implying that the military coup does not affect the remittance directly but indirectly through the economic recession in the country. Within our studied period, few events happened and might impact on the remittance. Obviously, the global financial crisis and MERS coronavirus are resulted to be significant aspects of the remittance inflow in the CLMV region. These critical situations mostly occurred in the countries of high economy and the host countries of CLMV could be included in those adverse economy, especially Thailand and Korea. These reasons enhance migrant workers to transfer more funds to the country of origin. Besides, the other critical events such as the military coup in Thailand (2006 and 2014), Tsunami in Southeast Asia (2004), and Tsunami in Japan (2011) are not significant to create the reaction of remittance. The insignificant result is most likely because the critical period is too short and the economies enable to recover in short time.

5. CONCLUSIONS

This paper aims to investigate the macroeconomic and non-economic determinants influencing the flows of migrant workers' remittances flow to the CLMV countries. The study is conducted by employing fixed-effect and random-effect models in the panel data set over the periods of 16 years (2000-2015). The empirical results reveal that the GDP per capita of the origin country, official exchange rate of the home country, migrant stock, GDP per capita of host country, and political stability index of home country are significant factors effecting on remittances' inflows to the CLMV countries. Larger migrant stock to the home country's population provides greater flow of remittances into the country of origin. The GDP per capita of most host countries (Japan, South Korea, and Singapore) positively effect on the remittances, except for the GDP per capita of Thailand. However, other left variables provide adverse effects on the remittance flow. Indeed, the coefficient of home country's GDP per capita is significantly negative. This finding leads the altruistic motive of migrant worker to remit more funds to the home country. Furthermore, the altruistic motive of migrant workers is clarified in the CLMV countries based on the

negative results of the domestic official exchange rate and political stability index. This implies that the migrant workers seem to ignore about the family as they expect better situations of family's living during improved economic condition of the home country, but the home country is primarily driven to send money back by altruistic motive during the recession of the country. The recession is possibly from the political uncertainty and makes currency depreciation in these countries. All dummy variables show expected results as the critical events create unstable condition in the countries of better economy and lead the remittances to move from those countries toward the CLMV countries.

From the findings, the remittances are fully depended on the altruistic motives to support the living of family. Hence, the results from our study suggest that the policy makers of the CLMV countries should implement the pro-growth policies and investment policies to create more jobs in the countries. These policies will provide better conditions in the CLMV countries rather than transferring remittances from abroad.

The limited quantitative macroeconomic data in some the CLMV countries lead to less demonstrating trait of migrant's remittance behavior. A further study should be extended by adding more the financial development and investment variables to understand the channel of remittance inflows. The qualitative data should be employed, this might help to deeply see migrant worker's remittance behavior in this developing region.

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