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DETERMINANTS OF INTERNATIONAL REMITTANCE INFLOWS IN MIDDLE-INCOME COUNTRIES IN ASIA AND THE PACIFIC

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Abstract

The middle-income trap is a serious problem in developing Asia and Pacific economies. Middle-income trap is the situation in which a country's growth slows after reaching middle-income levels and the transition to high-income levels becomes unattainable. International remittances of immigrants to their country of origin is one of the most important elements contributing to the development of middle-income countries. This paper by using data set consists of 12 Asia and Pacific middle-income countries—most of which are well-known migrant-sending countries—and by employing a panel data analysis technique, tried to find the determinants of international remittance. Results show that per capita gross domestic product growth in origin countries and wage growth rate in destination countries are positively correlated with remittance inflows in middle-income countries, respectively. On the other hand, net foreign direct investment (FDI) inflows are negatively correlated with remittance inflows. This can be interpreted as the paradigm shift of acquiring foreign capital in middle-income countries from remittance in earlier stages of development to more FDI when the country prepares the requirements for absorbing the foreign capital with an economic growth. Moreover, real effective exchange rate, the level of education, trade openness, and political stability are positively associated with remittance inflows.

Keywords: remittance, middle-income trap, poverty, developing Asia and the Pacific

JEL Classification: I31, I32, I38

Contents

1. INTRODUCTION

In today's world, the middle-income trap (MIC trap) is a serious problem in developing countries, and particularly in East Asia, where concerns about slower growth following the 1997 regional financial crisis prompted concerns of a protracted period of subpar performance (Im and Rosenblatt 2013). The MIC trap is the situation in which a country's growth slows after reaching middle-income levels. For countries facing the MIC trap, the transition to high-income levels becomes unattainable. There are 108 MIC countries in the world (World Bank 2018a), which means that around half of the global economies are below MIC level.

In some cases in the literature the MIC trap is described in terms of relative "catch-up" with the United States or some other rich country reference (Woo 2011; Lin and Rosenblatt 2012). In others, it is based on stagnation or painfully slow growth in absolute income levels. For example, Felipe et al. (2012) establish a definition based on the number of years a country takes to move from one income category to another, based on absolute thresholds for low, lower-middle, upper-middle and high-income countries.

On the other hand, there has also been a growing interest in international migration and in the resulting macroeconomic growth of origin countries. When we consider the linkage between migration and development, international remittances are thought to be one of the most important elements that contribute to the development of sending countries. International remittances refer to the money and goods that are transmitted to households by migrant workers working outside of their countries of origin (Adams 2007).

According to Global Development Finance (World Bank 2014), official international remittances represent the second most important source of external funding for developing countries next to foreign direct investment (FDI). The World Bank estimates[1] that officially recorded remittances to low- and middle-income countries reached $466 billion in 2017, an increase of 8.5% over $429 billion in 2016. Global remittances, which include flows to high-income countries, grew 7% to $613 billion in 2017, from $573 billion in 2016. This means that remittances can have a potential to contribute to the independent growth of developing countries.

Our earlier paper (Yoshino, Taghizadeh-Hesary, and Otsuka 2018a) examined the impact of international remittances on poverty reduction using the panel data of 10 Asian developing countries. Their results showed that international remittances have a statistically significant impact on the poverty gap ratio and poverty severity ratio under the random effect model of ordinary least squares (OLS) estimates. A 1% increase in international remittances as a percentage of GDP can lead to a 22.6% decline in the poverty gap ratio and a 16.0% decline in the poverty severity ratio in the sample of 10 Asian developing countries from 1981 to 2014.

The aim of the current research is to investigate the determinants of international remittance inflows in middle-income countries. The paper will investigate the determinant of international remittance inflows in 12 remittance recipient middle-income economies in East and South Asia defined by the World Bank. The period of the study is from 2002 to 2015.

The paper is structured as below:

Section 2 provides the background to the study by looking at (i) the middle-income countries in Asia and the Pacific; (ii) the international migration trends in Asia and Pacific

[1] https://www.worldbank.org/en/news/press-release/2018/04/23/record-high-remittances-to-low-and-middle-income-countries-in-2017

countries; and (iii) reviews recent trends of remittances to Asia and Pacific countries will be reviewed. Section 3 reviews the literature. In Section 4, the theoretical analysis will be provided. Section 5 gives the empirical analysis. Section 6 concludes and provides the policy recommendations.

2. BACKGROUND INFORMATION

2.1 Middle-Income Countries in Asia and the Pacific

According to the Word Bank (2018), the world's MIC countries are defined as having a per capita gross national income (GNI) of $1,006 to $12,235 (2016). MIC countries account for 73% of the world's poor people and are categorized into two parts; lower-middle-income countries and upper-middle-income countries. Lower-middle-income economies are those with a GNI per capita between $1,006 and $3,955, while upper-middle-income economies are those with a GNI per capita o between $3,956 and $12,235. In 2018, there were 53 lower-middle-income countries and 56 upper-middle-income countries in the world. Middle-income countries represent about one third of global GDP and can be thought as major engines of the global growth. Table 1 shows the middle-income countries in East Asia, the Pacific, and South Asia regions.

Table 1: Middle-Income Countries in East Asia, the Pacific, and South Asia

	East Asia and the Pacific	South Asia
Lower-middle income	Cambodia	Bangladesh
	Kiribati	Bhutan
	Lao PDR	India
	Micronesia, Fed. States of	Pakistan
	Mongolia	Sri Lanka
	Myanmar	
	Papua New Guinea	
	Philippines	
	Samoa	
	Solomon Islands	
	Timor-Leste	
	Vanuatu	
	Viet Nam	
Upper-middle income	PRC	Maldives
	Fiji	
	Malaysia	
	Marshall Islands	
	Palau	
	Thailand	
	Tuvalu	

Source: World Bank (2018b).

The vast majority of the population in Asia now lives in middle-income economies. As Table 2 shows, more than 90% of the population in Asia lived in low-income economies in 1991. However, as the region continued to steadily grow, Asian countries have lifted out of a low-income situation over a quarter of a century. In 2015, the proportion of low-income countries in Asia decreased to 1.6%, while 96.2% of Asian countries became middle-income countries. Comparing with the global scale, the transition from low-income to middle-income countries in Asia was very significant and this fact has made people expect a drastic growth of the Asian economy. However, as the recent economic situation shows, the transition from middle-income to high-income countries does not seem to be driven by the same factors that lifted Asian economies out of the low-income status. Some middle-income economies have been at the same stage for a long time, especially in Latin America. In Asia, four newly industrialized economies (NIEs): the Republic of Korea; Singapore; Taipei,China; and Hong Kong, China have successfully made the transition to becoming high-income economies. As an economy matures, productivity growth tends to come from innovation rather than the more basic sources of productivity growth, such as reallocating workers from low-productivity agriculture to higher-productivity manufacturing and service sectors (ADB 2017). To successfully achieve the transition to high-income, middle-income economies need to foster innovation and create positive productivity spillover. In this sense, we can say that Asia's NIEs have succeeded in progressing their own manufacturing, services, and innovations.

Table 2: Population Share by Income Groups in the World and in Developing Asia

	World (%)		**Developing Asia** (%)	
	1991	**2015**	**1991**	**2015**
Low	58.8	8.7	90.1	1.6
Middle	25.6	75.2	8.9	96.2
High	15.5	16.2	1.0	2.2

Source: ADB (2017).

2.2 International Migration Trend in Asia and Pacific Countries

Global migration continues to rise because of economic, demographic, social, political, cultural, and environmental factors (ADB 2016). In 1970, the number of international migrants was 78 million, which almost doubled to 153 million in 1990. In 2015, the number of international migrants reached up to 244 million (Ratha et al. 2016). Asia and the Pacific is the largest source of international migrants, having risen, since 1995, to 75 million in 2010 and up to 83 million in 2015 (ADB 2016). As for the regional data in Asia, South Asia has remained the largest source of migrants since the 1990s, accounting for 37 million in 2015, which is about 15% of all international migrants (ADB 2016). Southeast Asia is the second largest source of migrants, with 20 million migrants in 2015 increasing from 18 million in 2010. The number of migrants from East Asia has remained steady, being 14 million in 2015 compared with 13 million in 2010.

Economies in Asia and Pacific regions vary in size and level of economic or social development. Such differences tend to induce people to move in search of better living standards, income opportunities, education, and health services. Therefore, as Table 3 shows, the lower the income people have in their home economies, the more they wish to migrate to other economies. For example, the number of migrants from India in 2015 was around three times that in 2005. In India, although the economic growth has

progressed, people especially the well-educated and highly skilled decided to migrate. On the contrary, Singapore, which has experienced a huge economic growth recently, has increased the number of receiving migrants. That is mainly because of the demographic factors, especially labor supply and demand balance. Labor supply is still growing in developing economies such as Cambodia, Indonesia, the Lao People's Democratic Republic, Mongolia, Myanmar, India, Pakistan, and the Philippines. These countries can export labor resources across the region. In contrast, developed but aging economies, such as Hong Kong, China; the Republic of Korea; Japan; and Singapore, are finding it difficult to meet labor demand with their shrinking workforce. Therefore, these economies would benefit from receiving immigrant labor forces. For example, Japan has one of the highest life-expectancy rates in the world. The working population is diminishing drastically, and the elderly population is growing very rapidly. The aging population and the diminishing working population is one of the biggest causes of the long-term recession in Japan. The marginal productivity of employment on output has gradually diminished, from 1.071 in the 1950s to 0.085 in 2006–2010 (Yoshino and Taghizadeh-Hesary 2016). Therefore, the Japanese government needs to revise its immigration policies, in order to acquire a young labor force. Most recently, during Prime Minister Abe's administration, a new package of economic policies was introduced, which is the so-called "Abenomics." Abenomics has three arrows, the third arrow represents the growth strategies.[1] One of the most important policies in the growth strategies sector is the reforms required regarding the labor force. In response to this, the Japanese government is gradually easing immigration to Japan, especially from the regional countries, in order to absorb a young labor force in both sectors of highly skilled and normal labor force.

Table 3: Net Migration versus GDP per Capita in Selected Asian Economies

	2005		2015	
Economy	**GDP per Capita**	**Net Migration**	**GDP per Capita**	**Net Migration**
Japan	42,302	–1.3	44,657	–1.2
Singapore	40,020	–1.5	51,855	–2.2
Hong Kong, China	27,689	–1.9	36,117	–1.8
Rep. of Korea	18,586	1.5	25,023	1
Malaysia	7,942	–0.3	10,877	–0.7
Thailand	4,308	–1.5	5,775	–3.1
Indonesia	2,525	2.4	3,834	3.5
Philippines	1,821	3.4	2,635	5.1
India	1,012	3.7	1,806	10.4
Pakistan	978	0.7	1,152	2.3
Viet Nam	1,036	2	1,685	2.5
Bangladesh	601	4.6	973	5.8
Nepal	505	0.4	690	1.1
Cambodia	611	0.6	1,021	1.1

GDP per capita (constant 2010 US dollars).

Net migration (in millions) is difference between outbound and inbound migration. Thus, a (–) net migration denotes higher inbound migration, while a (+) sign denotes higher outbound migration.

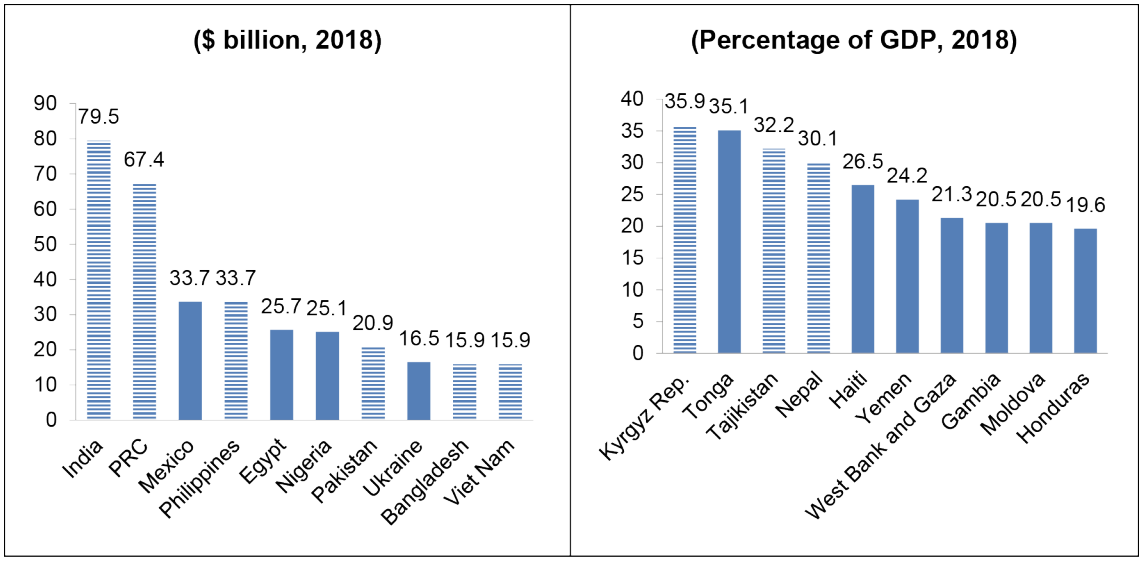
Source: ADB (2016).

[1] For more information about Abenomics see: Yoshino and Taghizadeh-Hesary (2015).

2.3 Recent Trends of Remittances to Asia and Pacific Countries

International remittances represent the second most important source of external funding for developing countries after foreign direct investment (FDI) (Yoshino, Taghizadeh-Hesary, and Otsuka 2018b). Remittance inflows and tourism receipts to Asia and the Pacific have increased relatively steadily since the 1990s (ADB 2016). After two consecutive years of decline (by 2.6 and 4.1% in 2015 and 2016, respectively), the World Bank estimates that international remittances to low- and middle-income countries have increased by 8.5% in 2017, reaching $466 billion (Ratha et al. 2018). Remittance flows to low- and middle-income countries (LMICs) are expected to reach $528 billion in 2018, an increase of 10.8% over 2017. Remittance flows rose in all six regions, notably in Europe and Central Asia (20%) and South Asia (14%). Growth was driven by a stronger economy and employment situation in the United States and a rebound in outward flows from the Gulf Cooperation Council (GCC) countries and the Russian Federation (World Bank 2018c). The top three countries receiving remittances in 2017 in absolute figures are located in Asia: India ($69 billion), the People's Republic of China ($64 billion) and the Philippines ($33 billion). The highest inflows in remittances were also reached in Mexico ($31 billion), Nigeria ($22 billion), and Egypt ($20 billion) (Ratha et al. 2018). In relative terms, the top five countries receiving remittances as a share of gross domestic product (GDP) for 2017 are the Kyrgyz Republic (35%); Tonga (33%); Tajikistan (31%); Haiti (29% which may be due to the large UN presence, see discussion on definition and data sources below); Nepal (29%); and Liberia (27%) (Ratha et al. 2018). Figure 1 shows the top remittance receivers in 2018.

Figure 1: Top Remittance Receivers in 2018

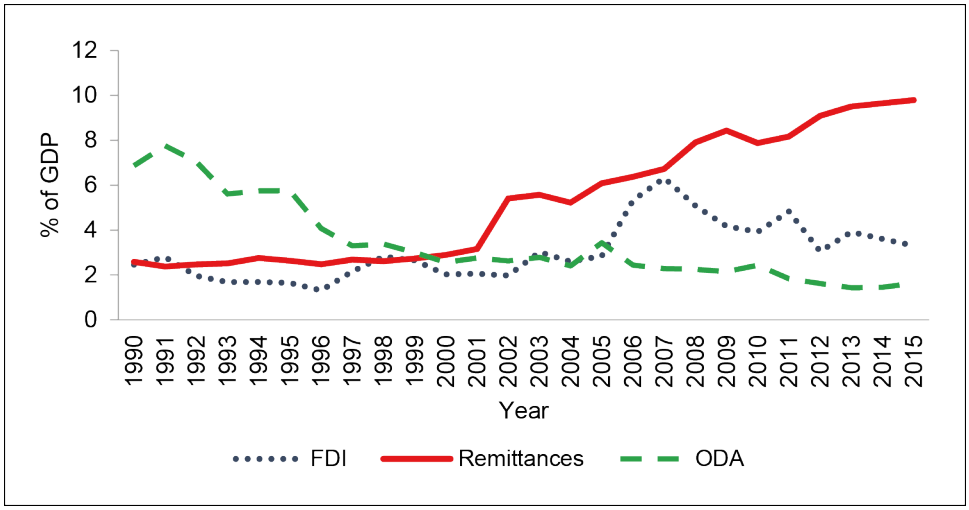


Note: Asian economies are filled with horizontal lines.

Sources: Authors based on data of World Bank (2018c). Note: The top recipient countries include several high-income countries such as France and Germany (not shown in the figure), but as a share of GDP, remittance flows to these countries are negligible. GDP = gross domestic product.

According to the World Bank (2018c) in 2017 the largest remittance to LMICs was for the East Asia and Pacific region ($133 billion), followed by South Asia ($11 billion). The economic effects caused by remittances in the South Asia region are quite robust. International remittances are the largest source of external resource flows in the South Asia region and have been stably increasing compared with other factors such as the FDI and official development assistance (ODA) (Figure 2).

Figure 2: External Resource Flows in the South Asia Region
(% of GDP)



Notes: FDI: foreign direct investment, ODA: official development assistance.
Data include Bangladesh, India, the Maldives, Nepal, Pakistan, and Sri Lanka.
Source: Author's compilation based on World Development Indicators (2016c).

3. LITERATURE REVIEW

As for the determinants of international remittances inflows, Lucas and Stark (1985) mention that altruism and self-interest can be the main determinants of remittance inflows. It is natural to consider that remittances are sent to the family who are left behind in the countries of origin due to altruistic feelings on the part of the emigrants. The migrants send remittances to their family taking care regarding poverty and consumption shocks of the family. In contrast to altruism, the self-interest of the migrants is also a factor of increasing remittance inflows according to Lucas and Stark (1985). The migrants may send remittances in order to invest in their reputation after they return to their home countries. Remittances can increase when the probability of inheriting assets increases, depending on the age of parents or the number of siblings. Stark and Wang (2002) also suggest the strategic model in order to explain the determinants of remittance inflows. Since highly skilled migrants usually earn a larger amount of income through migrating, they are typically the first to go abroad and unskilled workers follow them later. However, skilled workers may have an incentive to send money home in order to maintain unskilled workers in their home country because the migration of these unskilled workers might lead to depressed wages for the skilled migrants. In other words, this strategic model explains that remittance inflows increase with the income and education of the migrants and with a low income in the home countries. Sana and Massey (2005) find that migrants tend to remit money to economically active and entrepreneurial communities as a co-insurance resource. This means that the presence of official banks and the business opportunities in the home countries can also be the determinants of

remittance inflows. Schrooten (2005) shows that remittances can increase with the domestic unemployment rate and decrease with a higher degree of international integration of the sending countries' real sectors. International integration in this sense is the openness of the economy, which can be expressed as the sum of exports and imports over GDP. A higher degree of international integration of the real sector makes the export of labor forces as a precondition for remittance inflows less attractive. Moreover, higher GDP per capita can decrease the amount of remittances because microeconomic studies show that negative shocks to output, employment, and wages in the home country may encourage migrants to send more remittances. As for the regional research, Arun and Ulku (2011) investigate the remittance behaviors of the South Asian community using the data from Indian, Pakistani and Bangladeshi households in Manchester. They show that remittances of the South Asian community in Manchester are primarily determined by the employment status, and education level of the emigrants, as well as his or her rootedness in the UK and linkages to the home country. Katseli and Glytsos (1986) used the data from Greece and found that remittances were negatively correlated with the inflation of the home countries. Real exchange rate depreciation of the home currency against the currency of migrant-receiving countries has a positive effect on remittance inflows. In a more recent study, Sobiech (2019) used a newly created index of overall financial development in order to measure the importance of remittances given financial development for economic growth in developing countries. The results of Sobiech's paper revealed that the more financially developed a country is, the smaller the impact of remittances on growth. The level of financial development is important in determining the level of remittances, however there are several other factors that might have an impact on the remittance level that have been neglected in the aforementioned works. In the current paper we are planning to include several other control variables, including political stability, trade openness and level of education in addition to the economic output per capita and level of FDI in order to provide a comprehensive analysis of the factors determining the level of remittances and by this means contributing to the literature.

4. THEORETICAL ANALYSIS

Before setting the empirical model, this section theoretically demonstrates the determinants of remittance. In order to arrive at the empirical model in section 5, in this section we start with labor supply and labor demand equations:

4.1 Labor Supply

$$U_t^A = U\left(C_t, L_t^A, L_t^F\right) = \frac{(C_t)^{1-\sigma_C}-1}{1-\sigma_C} - \frac{\left(L_t^A\right)^{1-\sigma_A}-1}{1-\sigma_A} - \frac{\left(L_t^F\right)^{1-\sigma_F}-1}{1-\sigma_F} \quad (1)$$

Eq. 1 shows the utility (U_A) function of the migrant-sending country (country A), which shows the level of satisfaction or happiness in country A. The utility function consists of the consumption of goods (C_t), subtracting the labor supply of the Country A to the domestic market (L_t^A) and labor supply to the foreign market or to Country B (L_t^F).

Next, we write the budget constraint for Country A (Eq. 2):

$$C_t + S_t = W_t^A L_t^A + e_t W_t^F L_t^F \quad (2)$$

where S_t is the savings level in Country A, and e_t denotes the exchange rate between Country A and Country B.

$$(REM)_t = e_t W_t^F L_t^F \quad (3)$$

Eq.3. shows that $e_t W_t^F L_t^F$ is equal to the amount of remittance (REM) by the assumption that the foreign workers in Country B are remitting all of their earnings to the home country (Country A).

In order to find the optimal level of consumption, labor supply in the domestic market and labor supply in the foreign market, we need to develop a Lagrange function, which is defined as:

$$\Gamma = U\,(C_t, L_t^A, L_t^F) - \lambda(\,C_t + S_t - W_t^A L_t^A - e_t W_t^F L_t^F) \quad (4)$$

Obtaining the first-order conditions with respect to the consumption and labor supply in the domestic and foreign markets results in Eqs. 5−7:

$$\frac{\partial\,\Gamma}{\partial\,C_t} = (C_t)^{-\sigma_C} - \lambda = 0 \rightarrow (C_t)^{-\sigma_C} = \lambda \quad (5)$$

$$\frac{\partial\,\Gamma}{\partial\,L_t^A} = -(L_t^A)^{-\sigma_A} + \lambda W_t^A = 0 \rightarrow (L_t^A)^{-\sigma_A} = \lambda W_t^A \quad (6)$$

$$\frac{\partial\,\Gamma}{\partial\,L_t^F} = -(L_t^F)^{-\sigma_F} + \lambda e_t W_t^F = 0 \rightarrow (L_t^F)^{-\sigma_F} = \lambda e_t W_t^F \quad (7)$$

Substituting λ from Eq. 5 into Eq. 7 and writing it for L_t^F results in:

$$(L_t^F)^{-\sigma_F} = (C_t)^{-\sigma_C} e_t W_t^F \quad (8)$$

This means that labor supply to foreign markets is a function of C_t, W_t^F and e_t.

Based on economic theory, we know that consumption is a function of income level, hence we are writing the consumption equation as in Eq. 9:

$$C_t = cY_t^A \quad (9)$$

where c is the marginal propensity to consume and Y_t^A is the disposable income (or GDP per capita) in the domestic market. Next, substituting Eq. 9 in Eq. 8 results in Eq. 10:

$$(L_t^F)^{-\sigma_F} = e_t\{cY_t^A(Z_t)\}^{-\sigma_C} W_t^F \quad (10)$$

In other words, labor supply is a function of the marginal propensity to consume, the level of income in the domestic country, exchange rate and the wage rate in the foreign market. As is clear in Eq. 10, the income level is a function of Z_t , which is a vector of different variables, including the political stability, level of education, trade openness, foreign direct investment and so on.

Next, we look at the demand for labor in the foreign market (country B):

4.2 Labor Demand

The labor demand is coming from the foreign country, which is the migrant-receiving country (Country B) and Eq. 11 shows the production function of Country B:

$$Y_t^F = F(K_t^F, L_t^B, L_t^F) \tag{11}$$

Y_t^F denotes the total output in Country B, which is a function of total capital in Country B (K_t^F), the domestic labor supply in Country B and the foreign workers that came from Country A to Country B (L_t^B).

Eq. 12 shows the production function in the form of Cobb−Douglas:

$$Y_t^F = (\alpha K_t^F)^a (\beta L_t^B)^b (\gamma L_t^F)^{1-a-b} \tag{12}$$

where α is the technological progress, β is the skills of the domestic workers (workers of Country B), γ is the skills of foreign workers (workers of Country A). a is the elasticity of production of capital, b is the elasticity of production of domestic workers and $1-a-b$ is the elasticity of production of foreign workers; we are assuming that the production function has a constant return to scale. Next, we write the profit Equation as in Eq. 13:

$$\Pi_t^F = P_t Y_t^F - r_t K_t^F - W_t^B L_t^B - W_t^F L_t^F \tag{13}$$

where Π_t^F denotes the total profit in Country B, P_t denotes the price level in Country B, r_t is the interest rate, W_t^B denotes the wage rate for domestic workers in Country B, W_t^F denotes the wage rate for foreign workers in Country B (workers that came from Country A). Next, Country B is following profit maximization behavior and in order to find the profit maximizing level of capital and labor supplies we get the first-order conditions as in Eq. 14−16:

$$\frac{\partial \Pi_t^F}{\partial K_t^F} = \frac{a\alpha Y_t^F}{K_t^F} - r_t = 0 \rightarrow K_t^F = \frac{a\alpha Y_t^F}{r_t} \tag{14}$$

$$\frac{\partial \Pi_t^F}{\partial L_t^B} = \frac{b\beta Y_t^F}{L_t^B} - W_t^B = 0 \rightarrow L_t^B = \frac{b\beta Y_t^F}{W_t^B} \tag{15}$$

$$\frac{\partial \Pi_t^F}{\partial L_t^F} = \frac{(1-a-b)\gamma Y_t^F}{L_t^F} - W_t^F = 0 \rightarrow L_t^F = \frac{(1-a-b)\gamma Y_t^F}{W_t^F} \tag{16}$$

Eq. 16 shows the demand of Country B for foreign workers from Country A, which is a function of income level (GDP per capita) in Country B, wage rates of foreign workers in Country B and γ, which is the skills of foreign workers. Skills of foreign workers is a function of level of education.

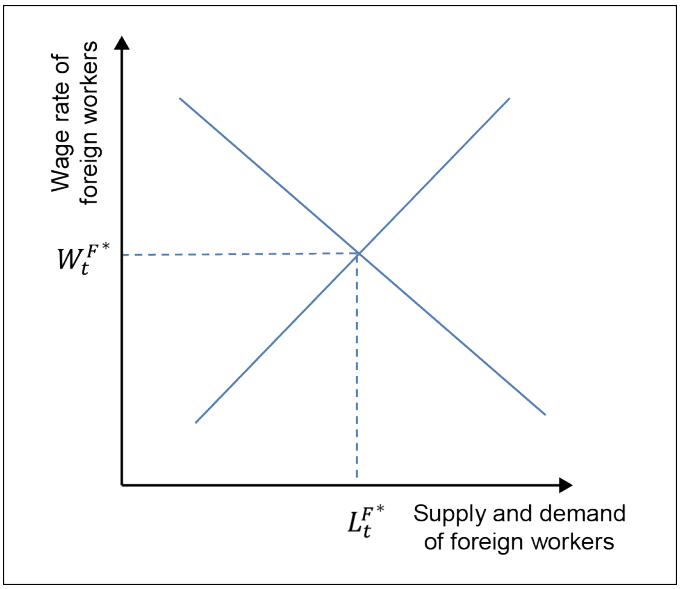
By setting Eq. 16, which is the demand for foreign workers equal to Eq. 10, which is the supply of workers to the foreign market, we get the equilibrium L_t^F or $L_t^{F^*}$ and equilibrium wage rates for foreign workers or $W_t^{F^*}$ as in Figure 3.

By inserting the equilibrium W_t^F in Eq. 3, and linearizing it, we write Eq.17 which shows the determinants of remittance:

$$(REM)_t = Y_t^A + Y_t^F + W_t^F + e_t + \gamma_t^A + Z_t \quad (17)$$

where Y_t^A denotes the income level in Country A, Y_t^F shows the income level in Country B, W_t^F denotes the wage rate in Country B, e_t denotes the exchange rate between Country A and B, γ_t^A denotes the skills of foreign workers in Country B (migrated from Country A), Z_t is the vector of other determining variables, including political stability, trade openness, FDI level and … in Country A. In writing Eq. 17, we are assuming that elasticity of production of capital (a), and elasticity of the production of domestic workers (b) are constant and marginal propensity to consume is also constant.

Figure 3: Equilibrium Wage Rate of Foreign Workers



Source: Authors' compilation.

5. EMPIRICAL ANALYSIS

5.1 Empirical Model

In order to investigate the determinants of remittance inflows into Asian middle-income countries, based on Eq. 17 this paper sets the following empirical model:

$$(REM)_{it} = \alpha_{it} + \beta_1\left(GDP_{it}^A\right) + \beta_2(GDP_t^B) + \beta_3 W_t^F + \beta_4\,(e_{it}) + \beta_5(E_{it}) + \beta_6(Z_{it}) + \varepsilon_{it} \quad (18)$$

(i = 1,…,N; t = 1,…, T)

In this model, the dependent variable REM is the measure of international remittances (as % of GDP) in country *i* at time *t*. α_t is a fixed effect that reflects time differences among countries. β_1 is the economic growth elasticity of remittance inflows with respect to the real per capita GDP of migrant-sending countries (Group A countries). β_2 is the economic growth elasticity of remittance inflows with respect to the real per capita GDP of migrant-receiving countries (Group B countries[2]). W_t^F is the wage rate in migrant-receiving countries. e_t is the wage rate between Group A and Group B countries and β_4 is the coefficient of it. E_t is the level of education in Group A countries that in this paper is defined as gross enrollment ratio, secondary education of both sexes (%) and β_5 is the coefficient of it. Z_t includes the control variables, which are trade openness represented by (imports + exports)/GDP, and Political stability[3] and FDI. Finally, ε_t is an error term that includes error terms in the remittances measure.

In this paper, the data set consists of 12 Asian middle-income countries: the PRC, Fiji, Indonesia, the Lao PDR, Malaysia, Papua New Guinea, the Philippines, and Thailand from East Asia and the Pacific and Bangladesh, India, Pakistan, and Sri Lanka from South Asia. All of these countries except Malaysia and Thailand are well-known migrant-sending countries. They have recently been undergoing a period of transition from being migrant-sending countries to being migrant-receiving countries. The empirical analysis is from 2002 to 2015.

5.2 Empirical Results

5.2.1 Unit Root Tests

In order to evaluate the stationarity of all series, this paper performed Fisher-type unit root test. The results show that we can reject the null hypotheses of the presence of a unit root for each variable by the second differencing. Table 4 provides results of the unit root tests. This paper used augmented Dickey−Fuller (ADF) tests.

Table 4: Unit Root Test Results

Variables	Fisher-type Unit Root Test
(a) Unit Root Tests at Levels	
Remittance Inflows (% of GDP)	17.64 (0.820)
Per Capita GDP Growth (Origin Countries)	3.21 (1.00)
Per Capita GDP Growth (Destination Countries)	106.92 (0.00***)
Wage Growth Rate	31.52 (0.14)
Real Effective Exchange Rate	1.86 (1.00)
FDI Net Outflows (% of GDP)	34.12 (0.08*)
Gross Enrollment Ratio, Secondary, Both Sexes (%)	23.58 (0.46)
Trade Openness	32.71 (0.11)
Political Stability	18.33 (0.77)

continued on next page

[2] This paper sets Group B countries as those which migrants mainly move to. For example, the main destination country for migrants in the Lao PDR is Thailand.

[3] Political stability and absence of violence/terrorism measures perceptions of the likelihood of political instability and politically motivated violence, including terrorism. Estimate gives the country's score on the aggregate indicator in units of a standard normal distribution; ranging from approximately -2.5 to 2.5. (The Worldwide Governance Indicators (WGI) project, 2018).

Table 4 *continued*

Variables	Fisher-type Unit Root Test
(b) Unit Root Tests at First Differencing	
Remittance Inflows (% of GDP)	58.44 (0.00***)
Per Capita GDP Growth (Origin Countries)	50.30 (0.00***)
Wage Growth Rate	33.99 (0.09*)
Real Effective Exchange Rate	14.04 (0.94)
Gross Enrollment Ratio, Secondary, Both Sexes (%)	8.67 (0.99)
Trade Openness	18.22 (0.79)
Political Stability	9.21 (0.99)
(c) Unit Root Tests at Second Differencing	
Real Effective Exchange Rate	56.93 (0.00***)
Gross Enrollment Ratio, Secondary, Both Sexes (%)	90.19 (0.00***)
Trade Openness	854.66 (0.00***)
Political Stability	44.54 (0.00***)

*** Indicates rejection of the null hypothesis of the presence of unit root at 1%.

* Indicates rejection of the null hypothesis of the presence of unit root at 10%.

Fisher-type unit root test is based on augmented Dickey−Fuller tests.

Notes: The numbers in parentheses are P values.

Source: Authors' compilation.

5.2.2 Hausman Test

Table 5 shows the results of the Hausman test in order to verify whether we should choose a fixed-effect model or a random-effect model. From the Hausman test, this paper will adopt a fixed-effect model because chi-square=0.000, where we reject the null hypothesis that the empirical model is a random-effect model; Cov (fixed effects, explanatory variables)=0.

The empirical results show that: first, the increase of GDP per capita growth rate leads to increasing remittance inflows in middle-income countries in Asia and the Pacific. Countries with high economic growth rate means that they are still developing economies with a huge potential for further growth. Therefore, the higher the GDP per capita growth rate is, the more people try to go abroad for better jobs with higher wages. However, at the same time, when the national economy is boosted by industrialization and human capital investments, there are more job opportunities and wages could also rise. Further economic growth from middle-income countries to high-income countries can lead to giving people a higher incentive to stay in their home countries and get better jobs there instead of going abroad.

Second, wage growth rate in migrant-receiving countries, such as the Group B countries in this paper, is positively correlated with remittance inflows. Many people from middle-income countries try to migrate to countries with higher wages than those in their home countries. Migrants are attracted by the countries where they can earn more money and acquire higher skills. Therefore, wage growth rate in destination economies and remittance inflows in origin countries are in positive correlation with each other.

Table 5: Hausman Test Results

Variables	Fixed	Random
Constant	–12.249*	–0.390
	(–1.95)	(–0.16)
Per Capita GDP Growth (Origin Countries)	0.184***	0.193**
	(2.23)	(2.26)
Per Capita GDP Growth (Destination Countries)	–0.021	–0.021
	(–0.93)	(–0.89)
Wage Growth Rate	0.572**	0.055*
	(1.98)	(1.65)
Real Effective Exchange Rate	0.076	0.023
	(1.33)	(0.40)
FDI Net Outflows (% of GDP)	–0.001***	–0.001***
	(–2.61)	(–2.74)
Gross Enrollment Ratio, Secondary, Both Sexes (%)	0.069	0.182*
	(0.68)	(1.77)
Trade Openness	0.104	–0.299
	(0.31)	(–1.14)
Political Stability	0.519	0.103
	(0.15)	(0.03)
R-Squared (Overall)	0.160	0.125
R-Squared (Within)	0.125	0.186
Prob (F-Statistics)	0.002	
Prob (Chi2)		0.003
Observations	159	159

*** Indicates rejection of the null hypothesis of the presence of unit root at 1%.

Notes: The numbers in parentheses are t-values.

Source: Authors' compilation.

Finally, as for the FDI net inflows, the increase of FDI inflows have a negative correlation with remittance inflows. This means that there can be some paradigm shift about the way of acquiring foreign capital in middle-income countries; from remittance inflows to FDI inflows. As middle-income economies develop, foreign capital can be obtained not only through the remittances from migrants but also from foreign countries as capital investment. When countries are in the earlier stages of development and sending many migrants, remittances are expected to be a major source of external funding. In addition, when countries are in the stage of developing, the readiness of their economies for absorbing foreign capital will increase. Therefore, gradually the share of FDI in total external funding will increase through the development of the basic infrastructure (hard and soft infrastructures).

The evidence of this can be seen in several countries, including in the PRC and Thailand. The PRC used to be a major immigrant-sending country. Most recently, however, with the development of the PRC economy in terms of industry and technological innovations, many job opportunities with higher wages have been created for Chinese people and many of them who had migrated to other countries, including Japan, the US, Europe, and so on, have been returning to their home country. Hence, for the case of the PRC, remittances are reducing and FDI is increasing. This is because the large population, who are becoming richer and richer, have a higher consumption demand level that needs

investments. Many companies from developed economies are trying to make good use of this opportunity by moving in on the Chinese economy and investing more in Chinese industries, especially in the technological, infrastructural, and financial sectors. As for Thailand, they are now in the transition from being a migrant-sending country to being a migrant-receiving country. This is mainly because of the drastic economic growth in Thailand since the 1980s and because of the declining population in Thai society. Through achieving economic growth boosted by export-oriented industries, per capita GDP in Thailand has been steadily increasing, except for in the period of the East Asia Crisis (1996−1998); $8,000 in 1993, $12,000 in 2006, and $16,000 in 2016 (ESCAP 2018). Here, FDI has been playing a very important role in the Thai economic growth and Thailand has rapidly progressed its industrialization, making good use of FDI from many developed countries. At the same time, Thailand is moving towards an ageing society and this is taking place faster than in any other emerging economy in Asia. According to the United Nations (2012), the average birth ratio from 2005 to 2010 was around 1.49 and the Thai population will reach its peak in 2023 with a population of around 6,793,000. In Malaysia, where per capita GDP is higher than that of Thailand, it is predicted that the population will reach its peak in 2070. These assumptions show us that declining populations and ageing are very serious and taking place rapidly in today's Thai society. These facts show us that the Thai economy is now focusing more on receiving much foreign capital including human, financial, and innovative capital.

Moreover, empirical results show that real effective exchange rate, gross enrollment ratio of secondary education, trade openness and political stability can all increase the amount of remittance inflows, although they are not statistically significant. For example, the increase in exchange rates means the depreciation of local currencies leading to more remittance inflows from destination currencies such as the US dollar. Moreover, as for the gross enrollment ratio of secondary education, the better and higher education people acquire, the more easily they can find good jobs abroad. This means that more educated people bring more money to their home countries in the form of remittances. This result also implies that not all people who emigrate from their home countries and get jobs abroad can achieve high wages and send them back to family members. This can lead to expanding the inequality within middle-income countries because highly educated people have more chances to work abroad and send more money to their families, while low-educated people have less chance to go abroad and they remain working in their home countries with lower wages.

6. CONCLUSION AND POLICY IMPLICATIONS

This paper investigated the determinants of international remittance inflows by developing an empirical model using a data set of 12 economies of middle-income countries in East Asia and the Pacific and South Asian countries. The empirical results provide insightful findings and policy implications:

First, per capita GDP growth and net FDI inflows are negatively correlated with remittance inflows in middle-income countries. As middle-income economies develop because of the growth of their domestic industries and development of their economies, the amount of FDI as foreign capital can be expanded instead of the remittance inflows. This can be interpreted as the paradigm shift of acquiring foreign capital in middle-income countries. Moreover, political stability is also negatively correlated with remittance inflows. The higher the risk of terrorism, war, lack of social freedom, lack of democracy, and political volatility can make people try to leave their home country in order to get better jobs or a better life and remit a part of their earnings to their families in their country of origin. However, at the same time, this paper found that those who

have higher educational backgrounds tend to migrate and send more money to the home countries as remittances, while low-educated people have less chance to go abroad and remain working in their home countries with lower wages.

Looking at the analysis overall, some policy implications can be offered in terms of the relationship between international remittances and development in countries of origin. Remittance inflows themselves are very important resources for developing economies in middle-income—and especially lower-middle-income—countries in terms of supporting families left in the countries of origin. The lower the economic level is, the greater the role of remittance inflows can be for the economic growth. In this sense, remittance can be a factor of economic development in lower-middle-income countries. However, as countries start to develop, the role of remittances can gradually diminish and FDI or other foreign capital replace the remittance inflows. In other words, remittances can contribute to the development of middle-income countries especially in the early stages, but not in the long term. India, for example, used to send many people to foreign countries, especially as IT-skilled workers. India achieved a drastic economic growth and improved its status in the global economy, thanks to the huge population and their success abroad. By the end of the 1990s, Chinese and Indian engineers were thought to be running around 30% of Silicon Valley's technology businesses (Saxenian 2002). However, at the same time, India had a problem with the so-called "brain drain," which is the migration of people endowed with a high level of human capital (Beine, Docquier, and Rapoport 2001). The brain drain sometimes has detrimental impacts on the country of emigration because of a negative externality, such as an imperfect substitution between skilled and unskilled labor forces. In order to tackle this problem, India changed its migration policy and its human resources management. Instead of sending many Indian people abroad, India started to increase the number of high-skilled engineers or IT professionals through constructing an innovative educational system. As shown in Table 3, net migration flows increased from 7 in 2005 to 10.4 in 2015. At the same time, many Indian people who had moved abroad, especially to join Silicon Valley's workforces, started to come back to India. This is because these Indian people had a high incentive to come back due to desirable job opportunities offered by their home countries with high wages. It is also because these returnees had a desire to contribute to their national economy making good use of their skills and experiences acquired abroad. By this reformation, the "brain drain" gave way to a "brain circulation," which allowed the movement of high skills and high talent to benefit both origin and destination countries. Benefiting one country at the expense of another country is not desirable for a sustainable economic growth in middle-income countries.

To sum up, when we consider a long-term socioeconomic development, we should broaden our outlook toward more domestic perspectives, such as human capital, the restructure of educational systems, political stability and so on. Sustainable and sound economy can be achieved from inward factors, such as R&D and human resources development, as well as from outward factors, such as remittances from migrants and foreign capital, including FDI or knowledge sharing.

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