6. Skills mobility and postsecondary education in the ASEAN Economic Community

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1. INTRODUCTION

Understanding the structure, causes, and impact of high-skilled intraregional labor mobility is an important precursor to building migration policy. Intra-ASEAN mobility has increased in recent years. In 2013, for example, 70% of the 9.5 million migrants living in ASEAN countries came from other ASEAN countries, far above the 40% in 1990 (Papademetriou et al. 2016). However, the intra-ASEAN migrant profile is incomplete because of the absence of sufficient, adequate, and appropriate data. Yet, despite these data obstacles, two intra-ASEAN migration characteristics are clear: (i) low-skilled workers comprise the majority of migrants; and (ii) the concentration of migration flows occur over a few main bilateral corridors. There is little available evidence as to whether these characteristics are ASEAN-specific or shared with other economic or trade communities. Therefore, this chapter tries to clarify ASEAN's migration characteristics by comparing these characteristics with other economic communities.

The analysis uses a high-skilled migration dataset with non-Organisation for Economic Co-operation and Development (non-OECD) countries as migrant hosts. Several comprehensive datasets of source/host migrations are available (Özden et al. 2011; Docquier and Marfouk 2004, 2006). However, only the latest from Artuc et al. (2015)—which includes non-OECD hosts and educational levels—is sufficient for the analysis here, even though it includes only two time points (1990 and 2000). While Asian countries such as India and the People's Republic of China (PRC) were included in the analysis, ASEAN was not.

After exploring the basic features of ASEAN migration, this chapter investigates the relationships between high-skilled labor migration (high-skill migration) and people (human capital) with postsecondary education. Considering the commonalities between mobility and human

capital development, the chapter examines (i) the role of human capital stock as determinants of migration and (ii) the impact of migration on postsecondary-educated human capital stock. International migration and education share common factors, as both invest in human agents whose decisions are intertwined in many dimensions (Dustmann and Glitz 2011). For instance, wage differences are the main drivers of both migration and education. From the perspective of capabilities proposed by Sen (1999), de Haas (2009) pointed out the general mechanism by which migration and human development are interrelated, the necessity of human development for migration, and the potential of migration for well-being and enhancing freedom. It is thus appropriate to discuss the cause and impact of high-skill migration together with postsecondary education.

As described in the literature review below, previous studies investigated these relationships empirically. But there is room for improvement. Few studies analyzed the ASEAN situation with a focus on intraregional mobility. The estimation model can be improved to consider the scope of effect and heterogeneity of countries and regions. Although the discussion of migration effects usually focuses on source countries, this chapter covers both source and host countries because migrants generate significant impacts on the native populations of host countries by participating in local capital and labor markets, as shown by Borjas (1994). Both source and host countries could have positive and negative impacts on various aspects—such as human capital, labor markets, and science and technology (Cervantes and Guellec 2002)—while several empirical studies show inconclusive results (Dustmann and Glitz 2011).

The definition of high-skill migration is complex. For instance, Papademetriou et al. (2016) define high-skill workers as individuals with a university education or equivalent professional experience. ASEAN members target high-skill migrants in eight professions—engineering, nursing, architecture, medicine, dentistry, tourism, surveying, and accounting. Considering the currently ambiguous definition—and viewed from a macro-perspective—this chapter defines high-skill individuals as those with postsecondary education and low-skill individuals as generally less educated. The definition of migration follows the one in the dataset provided by Artuc et al. (2015), where migration is measured on the country of birth as opposed to citizenship, which can change over time.

Thus, this chapter aims to clarify how high-skill migration is related to postsecondary education within ASEAN by comparing the relationship with other regional communities. Artuc et al.'s dataset for 1990 and 2000 is used for empirical analysis and estimation. The results show that intra-ASEAN migration was responsible for the lowest proportion of high-skill migration and the second-highest concentration of bilateral corridors among the four

regional communities examined—ASEAN, the Mercado Común del Sur (Common Market of the South, or MERCOSUR), the North American Free Trade Agreement (NAFTA), and the European Union (EU). High-skill intra-ASEAN migration is explained by the postsecondary-educated human capital stock in the source country, but not in the host country. However, bilateral high-skill intra-ASEAN mobility explains the postsecondary-educated human capital stock in both source and host countries. Therefore, high-skill ASEAN mobility could have a positive relationship with an increase in postsecondary education investment in source countries. These results indicate a need to encourage high-skill intra-ASEAN migration because of its positive effect on postsecondary education.

Section 2 describes the relevant literature and introduces research questions. Section 3 explains the model and dataset. Section 4 summarizes the results, and Section 5 concludes.

2. LITERATURE REVIEW AND RESEARCH QUESTIONS

High-skill migration, but not migration itself, has increased rapidly worldwide. In 2010, the 214 million international migrants represented only 3% of the world population, and increased only modestly compared with the accelerating global population growth (King 2012). The increase in the migration rate was just 0.4 of a percentage point from 1960 to 2005 (2.5–2.9% of the population) compared with trade, which increased threefold over the same period. However, high-skill migration shows a different picture. High-skill migrants to OECD countries increased at the same rate as trade (Docquier and Rapoport 2012). Following these trends, Clemens et al. (2014) show that the number of studies about migration and development grew sharply, and the topic has emerged as a proper research subfield. Most past studies focused on single hosts in the wealthiest nations (Kim and Cohen 2010); however, the improved Artuc et al. (2015) dataset made possible research targeting multiple hosts, including non-OECD countries.

Several reports and papers discuss high-skill migration in ASEAN countries (most published recently) and attempt to provide policy recommendations. As mentioned, these studies show that low-skill workers comprise the majority of migrants—in 2007, low-skill workers comprised 87% of intra-ASEAN migrants and 73% of global migrants (Orbeta 2013). They also show that migration flows concentrate within a few main bilateral corridors. Based on United Nations data from 2013, the top five corridors (from 57 intra-ASEAN corridors) represent around 88% of the total (Sugiyarto and Agunias 2014).

Comparisons with other economic communities are useful. Jurje and Lavenex (2015) compared mobility commitments in trade agreements to explore the labor mobility model in ASEAN countries with those of MERCOSUR, NAFTA, and the EU. While they used interview and documentary survey data to discuss the prospects for deeper labor market cooperation—including service-related mobility—additional empirical analysis on high-skill migration in ASEAN countries would help; even though simple data comparisons are insufficient considering the various historical, cultural, and socioeconomic backgrounds of the regional communities. Mobility policies or commitments, especially in host countries, also influence decisions to migrate. This leads to the first research question:

Research question 1 Are the high-skill intra-ASEAN migration characteristics—of (i) fewer high-skill migrants than low-skill migrants and (ii) migration concentrated in just a few main corridors—shared by other regional communities?

Although no single theory captures the complexity of migration, several theories of the determinants of migration have developed over the last 50 years (King 2012). One is the push-and-pull theory, where push factors describe migration from a source country or region because of poverty, political repression, or income level, and migration driven by pull factors such as better income or job opportunities in the host country. Piore (1979) found that migration was primarily driven by pull rather than push factors. The push-and-pull theory was followed by a neoclassical theory based on utility maximization; and then by a network theory, which moved beyond previous impersonal theories and connected individual and sociocultural reasons for migrating (Faist 1997). However, pull factors—such as wage differences between regions—remain crucial in driving migration (Mayda 2010; Clark et al. 2007; Grogger and Hanson 2011).

High-skill workers tend to migrate to OECD countries. In 2000, 72.6% of the 28.8 million high-skill workers worldwide migrated to OECD countries, while 46.1% of the 83.1 million low-skill workers globally migrated to the same countries (Artuc et al. 2015). Asian migrants followed these trends (ADBI 2014). Wage differentials and the accumulation of human capital (knowledge and experience) make OECD countries attractive. In theory, the neoclassical growth model predicts a human capital flow from abundant to scarce regions. But more evident in practice is the "brain drain" from scarce to abundant regions (Lucas 1988).

Using United States (US) data, Moretti (2013) empirically showed that postsecondary-educated workers move to regions with a greater accumulation of human capital. This could be because postsecondary-educated

people are more mobile as they seek distant educational or market opportunities (Wozniak 2010). While derived from domestic migration in the US, the argument might extend to international migration. This leads to the second research question:

Research question 2 Does high-skill intra-ASEAN migration positively relate to postsecondary-educated human capital in both source and host countries?

The impact of migration, especially on source countries, has been the main theme for much of the literature. However, the impact of international migration on human capital investment remains inconclusive.[1] Concerning the "beneficial brain drain" (Mountford 1997), some studies point to a remittance effect (Rapoport and Docquier 2006; Yang 2008) and prospects of better job opportunities abroad (Stark et al. 1997) as reasons to invest in further education. This has gained popularity recently after a series of macro-empirical studies by Beine et al. (2001, 2008, and 2010). The positive country-level impact was confirmed empirically in Cape Verde (Batista et al. 2012), Tonga and Papua New Guinea (Gibson and McKenzie 2011), and Africa (Easterly and Nyarko 2009)—although the first two studies covered sparsely populated island states with a heavy migration impact. However, several studies question the effect of "brain gain" through brain drain. For instance, based on partial and general equilibrium models, Schiff (2005) concluded that the brain gain actually resulted in smaller human capital gains and had a negative impact on human capital stock. Empirical analyses by Lucas (2007) and Checchi et al. (2007) had similar results.

Considering the inclusiveness of the effect of migration on human capital development, heterogeneity is assumed to be related. Reviewing migration and development literature from a theoretical perspective, de Haas (2010) concluded the picture was more nuanced. In some cases, migration has a positive effect, but in others there is no effect, or even a negative effect. Bhagwati (2009) described the diversity of impacts on source countries based on their level of human capital. These contradictory empirical results show that migration rarely has a uniform impact—the brain drain was massive only in small or very poor countries (de Haas 2010).

Heterogeneous determinants for enrollment in postsecondary education are another impact of migration. In addition to individual incentives, there are several other determinants for enrolling in postsecondary education. For example, in Japan these determinants include intertwined micro, mezzo, and macro student socioeconomic factors—such as household income, parent jobs and educational careers, university capacity in student home towns and education costs, job availability after graduation, and

regional cultural and historical factors (Kato 2016). At the micro level, according to Eccles (1994, 2005), expectancy–value theory shows major career choices are directly influenced by the deeply intertwined factors of psychological ability, competence, and subjective task value. Thus, the decision for postsecondary education enrollment could depend on complex conditions where incentives only play a partial role. This chapter tries to analyze the impact of migration on postsecondary enrollment in ASEAN by comparing country or regional heterogeneity—giving rise to the third research question:

Research question 3 Does high-skill intra-ASEAN migration influence postsecondary education enrollment in both source and host countries?

3. MODEL AND ESTIMATION METHOD

The first research question on ASEAN skill levels and migration corridors can be analyzed using descriptive statistics and research, as described in the Section 5 results below. The second and third require estimation models, which are discussed here.

The first model estimates the relationship between high-skill intra-ASEAN migration and postsecondary-educated human capital (Model (6.1)).

For bilateral skill migration, the gravity model—widely used by recent international migration studies—is used because of better access to improved bilateral data (Ramos 2016). Previous empirical studies using the gravity model include those exploring the determinants of international mobility (Kim and Cohen 2010; Beine et al. 2014) and bilateral knowledge networks (Maggioni and Uberti 2009).

The gravity model views migration as directly proportional to a country's population size or income and inversely proportional to the physical distance between the two countries. The model takes account of some variables, including language, culture, and shared history—such as former colonial links (Mayda 2010). Beine et al. (2014) also identified a significant network effect and destination appeal—such as university quality in host countries and number of international students. This chapter refers to the model proposed by Beine et al. (2014) because of the similarity between study targets.

The model for bilateral skill migration is defined as follows:

$$\text{Skill}migration_{(i,j,t)} = \alpha_0 + \alpha_1 \text{Relationship}_{(i,j,t)} + \alpha_2 \text{ODspecific}_{(i,j,t)} + \alpha_3 \text{Regiondum}_{(i,j)} + v_{(i,j)} + \varepsilon_{(i,j,t)} \quad (6.a)$$

where Skill*migration*$_{(i,j,t)}$ denotes the number of migrants from source country i to host country j ($i \neq j$) in time t, $v_{(i,j)}$ shows the unobserved bilateral factors, $\varepsilon_{(i,j,t)} \sim IN(0, \partial^2)$ is an error term, and α_0 a constant. The relationships of bilateral countries are captured as Relationship$_{(i,j,t)}$, source- and host-country specific as ODspecific$_{(i,j,t)}$, and a regional dummy as Regiondum$_{(i,j)}$.

These relationships include the distance and existing networks between the two countries. Although the analysis for developing countries shows that high-skill migration is less sensitive to geographic distance (Docquier and Rapoport 2012)—probably because of the development of transportation and communication technologies—it is worthwhile to investigate the impact of distance at the regional level. Beine et al. (2014) described the network as the total migration stock from the source country i to host country j. However, in this chapter the network is substituted by trade due to data limitations.

Beine et al. (2014) also included only host-specific variables such as skill prices for the specific factors considered. However, the model used here includes both source- and host-specific variables, such as the impact of economic level. Concerning source-specific factors, data from 1990 to 2000 confirm that middle-income countries have the highest average rates of high-skill migration to OECD countries—because people in these high-income countries have less incentive to emigrate and people in low-income countries have liquidity constraints (Beine et al. 2007). Martin (1996) confirmed an inverted U-shaped relationship or hump hypothesis between high-skill migration and income. Given these differences, Relationship$_{(i,j,t)}$, ODspecific $_{(i,j,t)}$, and Regiondum$_{(i,j)}$ in Model (6.a) are replaced as follows:

$$\begin{aligned}\ln\text{Skill}migration_{(i,j,t)} &= \beta_0 + \beta_1 \ln Dist_{(i,j)} + \beta_2 \ln Trade_{(i,j)} + \beta_3 Lang_{(i,j)} \\ &+ \beta_4 \text{Col}_{(i,j)} + \beta_5 \ln\max\{Income_{(j,t)} - Income_{(i,t)}, 0\} + \beta_6 \ln\max\{Hcapital_{(j,t)} \\ &- Hcapital_{(i,t)}, 0\} + \beta_7 \ln Income_{(j,t)} + \beta_8 \ln Income_{(i,t)} + \beta_9 \ln Hcapital_{(j,t)} \\ &+ \beta_{10} \ln Hcapital_{(j,t)} + \beta_{11} \text{Regiondum}_{(i,j)} + v_{(i,j)} + \varepsilon_{(i,j,t)} \qquad (6.1)\end{aligned}$$

In replacing Relationship$_{(i,j,t)}$, $Dist_{(i,j)}$, denotes physical distance and $Trade_{(i,j,t)}$, shows trade flows between the two countries. Language is captured as $Lang_{(i,j)}$ and former colonial ties as $\text{Col}_{(i,j,t)}$. Bilateral differences are denoted as $\{Income_{(j,t)} - Income_{(i,t)}, 0\}$ for income differences and $\max\{Hcapital_{(j,t)} - Hcapital_{(i,t)}, 0\}$ for human capital differences, which were modified to either take the greater value of the surplus of hosts or zero because the migration decision depends on the relative conditions of the paired countries.

In replacing $\text{ODspecific}_{(i,j,t)}$, $Income_{(i,t)}$, $Income_{(j,t)}$ denotes income level and denotes human capital level.

$\text{Regiondum}_{(i,j)}$ shows the regional dummy, whether migration is intraregional within each of the four regional communities (1) or not (0).

In Model (6.1), the coefficient of most independent variables (from β_2 to β_{10}) are expected to be positive and significant. For $\text{Relationship}_{(i,j,t)}$ they are $Trade_{(i,j,t)}$, $\text{Lang}_{(i,j)}$, $\text{Col}_{(i,j)}$, $\max\{Income_{(j,t)} - Income_{(i,t)}, 0\}$, $\max\{Hcapital_{(j,t)} - Hcapital_{(i,t)}\}$; for $\text{ODspecific}_{(i,j,t)}$, they are $Income_{(i,t)}$, $Income_{(j,t)}$ and $Hcapital_{(i,t)}$, $Hcapital_{(j,t)}$, assuming a bigger flow is observed within the resource-rich countries. As usual, $Dist_{(i,j)}$ (β_1) is expected to be negative and significant, and for $\text{Regiondum}_{(i,j)}$, (β_{11}) is expected to be significant in the case of regional differences in flows.

Nine models were used to conduct the estimation: the overall world migration flows, and intra- and out-migration flows from ASEAN, MERCOSUR, NAFTA, and the EU.

The second model—which deals with Research Question 3—estimates how high-skill intra-ASEAN migration influences postsecondary education enrollment (Model (6.2)). The model is assumed as a simple production function. Considering the two-way causal relationship between human capital stock and economic development (Kato and Ando 2007), income level is added as an independent variable with a relationship to postsecondary-educated human capital stock. Because this chapter assumes the effect of high-skill migration on source and host countries, the variables describing postsecondary-educated human capital stock, income level, and skill migration are treated as a product of those variables in source and host countries, or

$$\ln(\Delta Hcapital_{(i)} * \Delta Hcapital_{(j)}) = \beta_0 + \beta_1 \ln(\Delta \text{Skillmigration}_{(i)} * \text{Skillmigration}_{(j)}) + \beta_2 \ln(\Delta \text{Income}_{(i)} * \Delta \text{Income}_{(j)}) + v_{(i,j)} + \varepsilon_{(i,j)} \quad (6.2)$$

The coefficients of the independent variables in Model (6.2) (β_1, β_2) are expected to be positive.

3.1 Estimation Method

One of the challenges in using the gravity model (Research Question 2) is how to deal with the potential presence of zero or negative values in the case of net or no change in migrant flows. While alternative count data models may be used—such as Poisson, negative binominal, and zero-inflated models (Ramos 2016)—a count data model is used with some identification tests to determine which distribution pattern works.

The dependent variable in Model (6.1) uses panel data; therefore, a panel

estimation method can be applied, which assumes either fixed or random effects. The fixed effect is appropriate when the existence of a country- or corridor-specific effect is assumed. Alternatively, Hausman test results can decide whether the fixed or random effect is appropriate. However, due to a one-time point influential dummy such as distance, the random-effect model is used—as the fixed-effect model loses the one-time point data. One of the advantages of using panel data is that it is less likely to have multicollinearity problems, which could easily happen for Model (6.1)—because of the independent variables such as income and postsecondary-educated human capital stock. However, models using different combinations of independent variables were estimated to check for robustness. The ordinary least squares method was used in Model (6.2), which is based on the production function and where data time points are one.

4. DATA

Table 6.1 describes the data used. It merges four datasets with a variety of countries and various levels of data availability. The high-skill migration dataset from Artuc et al. (2015) initially included 195 countries, which was reduced here to 186. The dataset provides the number of postsecondary-educated bilateral migrant stock and direction of migration. It was the first to develop a global human capital migration map including non-OECD countries as hosts, which differs completely from previous studies that targeted high-skill migrant movement to OECD countries. The dataset used here found that non-OECD hosts account for one-third of high-skill migration worldwide, with a higher proportion of postsecondary-educated people immigrating to OECD countries.

5. RESULTS

5.1 Characteristics of High-Skill Intra-ASEAN Migration (Research Question 1)

5.1.1 High-skill migration in regional communities

Table 6.2 offers an overview of four regional communities—ASEAN, MERCOSUR, NAFTA, and the EU. ASEAN has the largest population yet the smallest economic output. Members with smaller populations and lower economic levels have a greater migration impact than those that are larger and higher income. In 2010, the average proportion of the ASEAN postsecondary-educated population ranked third—MERCOSUR had the

Table 6.1 Data description and variable sources

Variable name	Description	Source
Skillmigration	Number of postsecondary-educated migrants and direction of migration	Comprehensive migration matrixes by education level and gender (1990–2000) Database Version 2 (April 2013), analyzed by Artuc et al. (2015) (see http://perso.uclouvain.be/frederic.docquier/oxlight.htm)
Income	Per capita gross national income based on purchasing power parity (in USD)	World Bank *World Development Indicators* (see http://data.worldbank.org/products/wdi)
Hcapital	Postsecondary-educated people aged 15 years and over in 2010	Barro-Lee Educational Attainment Dataset (see http://www.barrolee.com/)
Dist	Distance between two countries based on distance between their largest cities, where intercity distance is weighted by city's share of overall population	Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) data: dist-cepii (see http://www.cepii.fr/)
Trade	Annual export and import of goods between two countries (in USD). Data for 1990 are unavailable at the country level—1995 data were substituted.	United Nations Comtrade Database (see https://comtrade.un.org/)

Note: Data accessed 14 February 2017.

smallest enrollment ratio for postsecondary education. This could relate to the proportion of skilled workers among total migrants.

Table 6.3 shows the high-skill migration for the four regional communities in 1990 and 2000. The Herfindahl–Hirschman Index (HHI)—usually used to show market share—shows the concentration of bilateral migration corridors.[2] ASEAN has some differences and commonalities with other regions. For instance, the number of high-skill intra-ASEAN migrants was less than out-migrants in 2000. The proportion of intraregional migrants to extra-regional migrants was 0.97 (ASEAN), 3.88 (MERCOSUR), 190.10

Table 6.2 Regional community overview

Name of regional community	ASEAN	NAFTA	MERCOSUL	EU
Number of countries	10	3	6	28
Names of members	Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam	Canada, Mexico, United States	Argentina, Bolivia, Brazil, Paraguay, Uruguay, Venezuela	Austria, Belgium, Bulgaria, Croatia, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovenia, Slovakia, Spain, Sweden, United Kingdom
Population (millions)	597.91	460.87	276.63	495.26
Total regional GDP (USD trillion)	2.135	17.985	3.31	17.552
GDP per capita (USD)	3,571	39,025	11,964	35,440
Total trade (export and import) (USD trillion)	2.493	5.38	0.847	11.813
Proportion of tertiary education graduates aged 15 years and over in 2010	7.5	19.7	4.5	13.5
Gross tertiary education enrollment ratio in 2010	25.15	60.02	50.85	65.88

Notes:
ASEAN = Association of Southeast Asian Nations; MERCOSUR = the Mercado Común del Sur (Common Market of the South); NAFTA = North American Free Trade Agreement; EU = European Union (excludes Estonia); GDP = gross domestic product; USD = United States dollar. Data on 2010 postsecondary gross enrollment were unavailable for Myanmar (replaced with 2011 data), Bolivia (2007), Venezuela (2009), and Germany (2013). Singapore postsecondary gross enrollment based on 2012 Japan Embassy document, http://www.sg.emb-japan.go.jp/Japanese/gaikyo.pdf. Canada excluded from NAFTA calculations. Brazil is net 2010 enrollment ratio from MEXT Japan.

Sources: Population, GDP, and trade data are from Ministry of Foreign Affairs, Japan, 2015 (http://www.mofa.go.jp/mofaj/files/000127169.pdf), latest data published 2016; complete statistics for EU28 are available at the europa.eu portal; postsecondary-educated human capital from Barro and Lee (2013); gross enrollment ratio calculated from World Bank *World Development Indicators*.

Table 6.3 Migration in 1990 and 2000: ASEAN, MERCOSUR, NAFTA, EU

Region	ASEAN		MERCOSUR		NAFTA		EU	
Variables	Intra	Out	Intra	Out	Intra	Out	Intra	Out
Number of high-skill migrants in 2000	1,278	1,314	1,587	409	171,451	902	2,468	1,063
Share of high-skill migrants in 2000	10.41%	44.53%	23.06%	33.42%	21.05%	56.48%	21.55%	39.36%
Increase in high-skill migrants between 1990 and 2000 (%)	2.13	1.80	1.50	2.07	1.79	1.61	1.89	1.23
Increase low-skill migrants between 1990 and 2000 (%)	1.36	1.53	1.05	2.84	2.07	1.13	1.07	0.93
Number of observations	100	1,750	36	1,074	9	546	784	4,396
Herfindahl–Hirschman Index (HHI)	2876.39	—	786.79	—	4449.86	—	166.76	—

Notes:
ASEAN = Association of Southeast Asian Nations; MERCOSUR = the Mercado Común del Sur (Common Market of the South); NAFTA = North American Free Trade Agreement; EU = European Union.
Values are the average of bilateral corridors. "Intra" means migration within the region; "Out" means migration from one region to another.

Source: Calculations based on data from Artuc et al. (2015).

(NAFTA), and 2.32 (EU). Although large intraregional migration within NAFTA and EU members is understandable given host countries are major OECD members—such as the United States in NAFTA countries and the United Kingdom and Germany in the EU—MERCOSUR also had more intraregional high-skill migrants than extra-regional migrants. However, all regional communities had higher proportions of high-skill extra-regional migrants than intraregional migrants. The difference of the proportion between intra- and extra-regional migrant mobility was biggest in ASEAN; the proportion of intra- (10.41%) versus extra-regional migrant mobility (44.53%) is 4.28. Among other regions, the highest proportion was 2.68 in NAFTA; the lowest was 1.45 in MERCOSUR.

Between 1990 and 2000 intra-ASEAN high-skill migration showed the highest increase (213%), higher than extra-regional migrant mobility (180%). The EU and NAFTA also had bigger increases in intraregional migration than extra-regional migration. High-skill migration increases were higher than low-skill migration increases in ASEAN and the EU. High-skill mobility in intraregional migration increased more than high-skill extra-regional migrant mobility, except in NAFTA.

In terms of bilateral intraregional migration corridors, the HHI was high in ASEAN (2,876.39) and NAFTA (4,449.86)—both of which are categorized as having high oligopoly tendencies. The HHI was lowest in the EU (166.76), followed by MERCOSUR (786.79), both categorized as having low-level oligopolies with greater competition.

5.1.2 Corridors of high-skill migration within ASEAN

Table 6.4a presents the top 10 corridors of intra-ASEAN migration in 1990 and 2000. Total migration more than doubled (118%) during the period. In both 1990 and 2000, the top 10 corridors covered more than 85% of total intraregional high-skill migration. The top corridor—from Malaysia to Singapore—more than tripled. In 2000, just over half of the total ASEAN high-skill migration (52%) was through this corridor, an increase of almost 20% from 1990. And with ASEAN admitting Viet Nam in 1995, the Lao PDR and Myanmar in 1997, and Cambodia in 1999, new high-skill migration corridors developed over the decade.

Table 6.4b shows the top 10 corridors for ASEAN extra-regional migration in 1990 and 2000. Total extra-regional migration increased 78% over the period. The top 10 corridors account for some 75% of the total in both 1990 and 2000. The top seven corridors held the same rank between 1990 and 2000. The US was the most popular host, with others prominent because of their colonial history (Indonesia–the Netherlands), geographical proximity (Australia as host), and migration experience (the Philippines–Saudi Arabia).

Table 6.4c describes the top 10 corridors of migration into ASEAN in

Table 6.4a Top 10 corridors of high-skill intra-ASEAN migration

Rank	2000				1990			
	Source	Host	Skill migration stock	%	Source	Host	Skill migration stock	%
1	Malaysia	Singapore	66,452	51.99	Malaysia	Singapore	19,005	31.61
2	Singapore	Malaysia	8,400	6.57	Philippines	Malaysia	9,273	15.42
3	Indonesia	Singapore	6,952	5.44	Indonesia	Malaysia	8,736	14.53
4	Malaysia	Brunei Darussalam	6,135	4.80	Myanmar	Thailand	5,298	8.81
5	Viet Nam	Cambodia	6,018	4.71	Malaysia	Brunei Darussalam	3,729	6.20
6	Indonesia	Malaysia	5,650	4.42	Indonesia	Singapore	1,820	3.03
7	Indonesia	Philippines	3,689	2.89	Thailand	Malaysia	1,688	2.81
8	Philippines	Malaysia	3,650	2.86	Singapore	Malaysia	1,242	2.07
9	Thailand	Cambodia	3,269	2.56	Philippines	Brunei Darussalam	725	1.21
10	Malaysia	Philippines	2,974	2.33	Thailand	Brunei Darussalam	489	0.81
Subtotal			113,189	88.55			52,005	86.50

Note: ASEAN = Association of Southeast Asian Nations.

Source: Calculations based on data from Artuc et al. (2015).

Table 6.4b Top 10 corridors of high-skill ASEAN extra-regional migration

Rank	2000				1990			
	Source	Host	Skill migration stock	%	Source	Host	Skill migration stock	%
1	Philippines	United States	833,958	36.27	Philippines	United States	496,276	38.87
2	Viet Nam	United States	347,127	15.10	Viet Nam	United States	132,697	10.39
3	Philippines	Canada	154,960	6.74	Philippines	Canada	74,335	5.82
4	Indonesia	Netherlands	78,548	3.42	Indonesia	Netherlands	53,207	4.17
5	Viet Nam	Australia	57,970	2.52	Viet Nam	Australia	43,860	3.43
6	Thailand	United States	57,375	2.50	Thailand	United States	37,705	2.95
7	Philippines	Australia	51,487	2.24	Philippines	Australia	37,036	2.90
8	Viet Nam	Canada	49,790	2.17	Malaysia	Australia	35,366	2.77
9	Philippines	Saudi Arabia	41,654	1.81	Philippines	Saudi Arabia	28,688	2.25
10	Lao People's Democratic Republic	United States	41,440	1.80	Indonesia	United States	26,385	2.07
Subtotal			1,714,309	74.56			965,555	75.62

Note: ASEAN = Association of Southeast Asian Nations.

Source: Calculations based on data from Artuc et al. (2015).

Table 6.4c Top 10 corridors of high-skill ASEAN in-migration

Rank	2000				1990			
	Source	Host	Skill migration stock	%	Source	Host	Skill migration stock	%
1	People's Republic of China	Singapore	30,567	18.96	People's Republic of China	Philippines	23,725	17.71
2	India	Singapore	17,593	10.91	United States	Philippines	18,263	13.63
3	People's Republic of China	Philippines	11,376	7.06	People's Republic of China	Thailand	12,625	9.42
4	United States	Philippines	10,678	6.62	People's Republic of China	Indonesia	11,276	8.42
5	United Kingdom	Philippines	7,226	4.48	United Kingdom	Philippines	7,679	5.73
6	Japan	Thailand	6,317	3.92	People's Republic of China	Malaysia	5,615	4.19
7	India	Malaysia	5,600	3.47	People's Republic of China	Singapore	4,991	3.73
8	Bahrain	Philippines	4,794	2.97	Japan	Philippines	4,760	3.55
9	Japan	Malaysia	3,950	2.45	People's Republic of China	Myanmar	2,807	2.10
10	Hong Kong, China	Thailand	3,028	1.88	India	Philippines	2,354	1.76
Subtotal			101,129	62.73			94,095	70.24

Note: ASEAN = Association of Southeast Asian Nations.

Source: Calculations based on data from Artuc et al. (2015).

1990 and 2000. The increase was 7% over the decade, below the growth of both intraregional and extra-regional migration of high-skill migrants. On one hand, the slow growth was because of a decrease in high-skill migration to the Philippines. On the other hand, Singapore became far more attractive as a host for migrants from the People's Republic of China (PRC) and India. In addition, corridors grew more diverse over the period. For example, the PRC as source country appeared six times in 1990 and twice in 2000, while the Philippines as a host country appeared five times in 1990 and three times in 2000.

5.2 The Relationship between High-Skill Intra-ASEAN Migration and Postsecondary-Educated Human Capital (Research Question 2)

For Model (6.1), deviance and Pearson goodness-of-fit tests were conducted to decide the count data model distribution (deviance: goodness-of-fit = 9199.468, $p > \chi^2$ (7823) = 0.0000; Pearson: goodness-of-fit = 7672.638, $p > \chi^2$ (7823) = 0.8858). Although the results of these two tests are inconsistent, the Pearson test supports the use of Poisson distribution. The Vuong test was then conducted, with the results supporting the use of the zero-inflated model (z = 32.36, p > z = 0.0000). Therefore, the zero-inflated Poisson regression is appropriate for Model (6.1) and the panel data estimation with random effect. The results are in Table 6.5, showing R^2 higher in the panel data estimation shown from columns (1) to (8) than the zero-inflated Poisson estimation shown from columns (9) to (16). Although the significance and sign of coefficients are similar between the two estimation types (with some exceptions), the results estimated by panel data is better.

From the estimation results targeting the entire data shown as World in column (1), the coefficient of four regional dummy variables does not show any significant result. However, the cross term of human capital stock in ASEAN countries does show significant results, indicating that the human capital stock in either ASEAN source or host countries has a different relationship with high-skill migration to other regions.

The similarities and differences between ASEAN countries and other regions appear in the relationship between bilateral countries. First, the coefficient of distance variable for intra-ASEAN mobility shown in column (3) is negative and significant, and that of extra-ASEAN migration in column (4) is insignificant—the same tendency as that for the EU. This differs from expectations, which assumes negative and significant coefficients of the distance variable for any migration type. This result means that distance matters for intra-ASEAN and intra-EU migration, but not for extra-regional migration. The coefficient of trade is significant

and positive for intra-ASEAN mobility in column (3). Trade seems to have little relationship with skill migration within ASEAN countries, which again differs from expectations as well as the results of Jurje and Lavenex (2015). The common official language is also positive and significant for both intra- and extra-ASEAN migration—as with the EU. For source- and host-specific characteristics, the coefficient of income in the host variable has—as expected—positive and significant results for all four regions and the world. Income in source is positive and significant for intra-ASEAN and extra-NAFTA migration, but negative and significant in both intra- and extra-EU migrations in columns (7) and (8). Against expectations, human capital in the host variable shows insignificant results. However, the source variable includes various regions and types of migration—the world, extra-ASEAN migration, intra- and extra-EU migration are positive and significant, while extra-NAFTA migration is negative and significant. Income and human capital stock differences between source and host countries do not show any significant results except for the world estimation—these differences have little influence on intraregional migration, but could have some relationship with income and human capital levels in both source and host countries.

In summary, when migrating within ASEAN, high-skill workers from higher-income countries move to nearby countries with relatively higher incomes and common languages. The migration flow is irrespective of trade in ASEAN countries—which differs from the relationship in MERCOSUR, NAFTA, and the EU.

In Table 6.6, the estimation results for different combinations of independent variables in Model (6.1)—targeting high-skill intra-ASEAN migration—are shown from columns (17) to (22). Results on targeting high-skill intra-EU migration are in columns (23) to (28). The average of R^2 is 0.457 in ASEAN countries and 0.702 in the EU, which indicates that the current education and economy-focused model had a better fit for the EU—although the number of observations between the two datasets is on average 72 and 694, respectively. Here, the results of distance and official language have the same sign and significance as all the results. The coefficient of the income difference variable does not show any significant result, but that of the human capital difference is significant for the model without source- and host-specific variables. Human capital in the host variable shows an insignificant result in column (23), and that of host shows positive and significant results at the 1% level in column (21). These results indicate that high-skill migration has a positive relationship with human capital in the source country, but not the host country within ASEAN and the EU. The coefficient of income level in either source or host country is also significant.

Table 6.5 Estimation results for Model (6.1) combined

Method	Panel with random effect							
Model (6.1)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Target	World	World	Intra-ASEAN	Out ASEAN	Out MERCOSUL	Out NAFTA	Intra-EU	Out EU
Independent variables								
Distance	−0.6091***	−0.6068***	−1.7348***	0.08	−1.3343***	−0.8794***	−0.6194***	0.01
	(−18.67)	(−20.67)	(−3.15)	(0.35)	(−5.26)	(−4.22)	(−5.82)	(0.08)
Income difference	0.0626***	0.0629***	−0.28	0.05	0.01	0.11	−0.03	0.1765***
	(3.16)	(3.18)	(−1.21)	(0.69)	(0.15)	(0.67)	(−0.47)	(3.32)
Hcapital difference	−0.0586***	−0.0600***	0.10	−0.1099*	−0.07	−0.07	0.03	−0.05
	(−3.16)	(−3.23)	(0.39)	(−1.75)	(−0.93)	(−0.65)	(0.56)	(−0.96)
Trade	0.2099***	0.2098***	0.13	0.2167***	0.1537***	0.3539***	0.3371***	0.2585***
	(20.42)	(20.50)	(1.06)	(5.47)	(3.00)	(6.57)	(7.35)	(7.72)
Hcapital in destination	0.03	0.03	−0.15	−0.11	0.05	0.00	0.15	0.01
	(1.16)	(1.32)	(−0.68)	(−1.04)	(0.51)	(−0.02)	(1.37)	(0.22)
Hcapital in origin	0.3739***	0.3719***	0.01	0.3025***	0.09	−2.4315***	0.7794***	0.7552***
	(13.53)	(13.48)	(0.04)	(2.96)	(0.43)	(−3.26)	(6.89)	(6.12)
Income in destination	0.6103***	0.6080***	0.5800*	0.9201***	0.8454***	0.4177***	0.4838***	0.5027***
	(20.52)	(20.45)	(1.80)	(7.31)	(6.56)	(3.63)	(4.32)	(7.36)
Income in origin	−0.0889***	−0.0872***	1.1256***	−0.16	0.14	2.9479***	−0.2935**	−0.5022***
	(−2.80)	(−2.75)	(2.65)	(−1.07)	(0.73)	(3.84)	(−2.45)	(−3.98)
Four regional community dummy	0.01							
	(0.21)							

Official common language	1.4160*** (21.84)	1.4169*** (22.22)	2.0323** (2.53)	1.3229*** (3.82)	0.19 (0.47)	0.8304*** (3.94)	1.2426*** (4.23)	1.0800*** (4.38)
Colony relation	1.6647*** (12.19)	1.6680*** (12.22)	0.00 (.)	3.2622*** (4.06)	2.4924*** (3.07)	1.4437** (2.30)	1.3805*** (4.42)	1.4724*** (5.08)
Hcapital in ASEAN destination		−0.1730* (−1.72)						
Hcapital in ASEAN origin		0.1902** (2.05)						
Constant	−14.1655*** (−20.74)	−14.1863*** (−20.85)	−21.0553** (−2.56)	−22.8026*** (−6.19)	−13.1476*** (−3.13)	−50.9020*** (−5.26)	−14.1131*** (−5.90)	−15.1309*** (−7.28)
Inflate trade								
Inflate constant								
Adj. R-squared	0.53	0.53	0.52	0.53	0.61	0.60	0.73	0.44
N	7,835	7,835	64	572	304	419	648	1,501

Table 6.5 (continued)

Method	Poisson							
Model (6.1)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Target	World	World	Intra-ASEAN	Out ASEAN	Out MERCOSUL	Out NAFTA	Intra-EU	Out EU
Independent variables								
Distance	−0.1739***	−0.1754***	−0.2539**	−0.06	−0.3460***	−0.2790***	−0.1690***	−0.0797***
	(−23.63)	(−28.04)	(−2.05)	(−1.33)	(−5.06)	(−5.63)	(−5.79)	(−4.38)
Income difference	0.0160***	0.0166***	−0.08	−0.03	0.01	0.02	0.00	0.0544***
	(2.86)	(2.97)	(−1.42)	(−1.48)	(0.66)	(0.37)	(0.07)	(3.90)
Hcapital difference	−0.0194***	−0.0204***	0.09	−0.0321*	−0.0454*	−0.0619*	0.01	−0.0277**
	(−3.56)	(−3.75)	(1.26)	(−1.75)	(−1.89)	(−1.67)	(0.36)	(−2.05)
Trade								
Hcapital in destination	0.01	0.01	−0.08	−0.0554*	0.06	0.00	0.05	−0.01
	(1.29)	(1.55)	(−1.48)	(−1.82)	(1.60)	(−0.13)	(1.23)	(−0.33)
Hcapital in origin	0.0959***	0.0948***	(0.06)	0.1066***	0.02	−0.6799***	0.1278***	0.1331***
	(12.66)	(12.61)	(−0.69)	(3.58)	(0.33)	(−3.26)	(3.16)	(3.74)
Income in destination	0.1858***	0.1850***	0.1704**	0.3214***	0.2084***	0.1634***	0.1271***	0.1924***
	(23.28)	(23.27)	(2.13)	(9.73)	(4.83)	(5.34)	(3.59)	(11.10)
Income in origin	0.0146*	0.0157**	0.2707**	−0.04	0.08	0.8872***	0.01	−0.03
	(1.86)	(2.02)	(2.11)	(−0.84)	(1.53)	(4.06)	(0.21)	(−0.87)
Four regional community dummy	0.01							
	(1.01)							
Official common language	0.3325***	0.3311***	0.3471**	0.2881***	0.02	0.2188***	0.1779**	0.2814***
	(22.18)	(22.44)	(2.34)	(4.16)	(0.12)	(4.18)	(2.31)	(5.42)

Colony relation	0.2455*** (9.96)	0.2469*** (10.01)	0.00 (.)	0.4072*** (3.73)	0.4851** (2.57)	0.06 (0.52)	0.2823*** (3.56)	0.2632*** (4.81)
Hcapital in ASEAN destination	−0.0636*** (−2.72)							
Hcapital in ASEAN origin	0.0711*** (3.28)							
Constant	−3.8844*** (−22.38)	−3.8929*** (−22.43)	−5.1222* (−1.96)	−4.9504*** (−4.75)	−4.0102*** (−3.09)	−13.5749*** (−4.82)	−3.1427*** (−4.39)	−4.9545*** (−9.93)
Inflate trade	−0.2703*** (−16.34)	−0.2701*** (−16.32)	−2339.85 (−0.00)	−0.3361*** (−5.54)	−0.3046** (−2.13)	−0.4644*** (−3.29)	−0.94 (−0.77)	−0.2896*** (−7.21)
Inflate constant	1.4638*** (5.81)	1.4593*** (5.79)	34054.16 (0.00)	3.0938*** (3.29)	1.49 (0.74)	5.1696** (2.14)	8.79 (0.46)	2.3658*** (3.58)
Adj. R-squared	0.156	0.157	0.035	0.172	0.163	0.115	0.149	0.143
N	7,835	7,835	64	572	304	419	648	1,501

Notes:
ASEAN = Association of Southeast Asian Nations; MERCOSUR = the Mercado Común del Sur (Common Market of the South); NAFTA = North American Free Trade Agreement; EU = European Union.
Values are the average of bilateral corridors. "Intra" means migration within the region; "Out" means migration from one region to another. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, intra-MERCOSUR and intra-NAFTA were omitted because of the limited number of observations.

Source: See Table 6.1.

Table 6.6 Estimation results for Model (6.1) by region

Model (6.1)	Panel with random effect					
Target	Intra-ASEAN					
Independent variables	(17)	(18)	(19)	(20)	(21)	(22)
distance	−1.0283**	−1.7555***	−1.8545***	−0.8789	−1.4647***	−1.1463*
	(−1.97)	(−3.34)	(−4.11)	(−1.57)	(−2.74)	(−1.90)
income difference		−0.26		0.33	−0.21	0.26
		(−1.17)		(1.59)	(−0.87)	(1.20)
Hcapital difference	0.0123			0.2501	0.0948	0.2154
	(0.05)			(0.96)	(0.37)	(0.85)
trade	0.2389**	0.133		0.3765***	0.2998***	0.1982
	(2.47)	(1.08)		(3.60)	(3.02)	(1.41)
Hcapital in destination	0.1712		0.1325			−0.2773
	(1.37)		(0.79)			(−1.16)
Hcapital in origin	0.5409***		0.4604***		0.0132	
	(3.31)		(2.76)		(0.05)	
income in destination		0.4104**	0.4076*			0.7564**
		(2.15)	(1.81)			(2.10)
income in origin		1.1872***	0.3954*		1.1553***	
		(4.49)	(1.85)		(2.66)	
official common language	2.3677***	2.0629***	2.6598***	1.7160**	1.8809**	1.8210**
	(2.83)	(2.61)	(3.88)	(1.97)	(2.33)	(2.00)
colony relation	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)
_cons	−2.1277	−19.2525***	−9.9657*	−7.8524	−16.4990**	−15.4098**
	(−0.49)	(−3.19)	(−1.73)	(−1.22)	(−2.19)	(−2.07)
R-squared	0.4197	0.5032	0.5343	0.3975	0.4963	0.3897
N	78	64	99	64	64	64

Model (6.1)	Panel with random effect					
Target	Intra-EU					
Independent variables	(23)	(24)	(25)	(26)	(27)	(28)
distance	−0.6543***	−0.6509***	−0.9198***	−0.3717***	−0.3764***	−0.4664***
	(−6.26)	(−5.86)	(−9.31)	(−3.17)	(−3.30)	(−4.17)
income difference		−0.01		0.06	0.1089*	0.01
		(−0.18)		(0.85)	(1.72)	(0.17)
Hcapital difference	0.0138			0.2129***	0.1269**	0.1760***
	(0.31)			(3.46)	(2.11)	(2.99)
trade	0.3862***	0.2592***		0.6506***	0.6800***	0.5151***
	(10.24)	(5.62)		(19.92)	(19.22)	(14.77)
Hcapital in destination	0.6055***		0.1417			0.1371
	(11.30)		(1.57)			(1.17)
Hcapital in origin	0.3949***		0.4486***		0.9245***	
	(7.24)		(4.93)		(7.57)	
income in destination		0.6983***	0.7575***			0.2734**
		(12.17)	(8.83)			(2.44)
income in origin		0.4687***	0.2762***		−0.8243***	
		(8.02)	(3.26)		(−6.97)	
official common language	1.1811***	1.1901***	1.6001***	0.6630**	0.7901**	0.8648***
	(3.88)	(3.88)	(5.70)	(2.02)	(2.48)	(2.76)
colony relation	1.3303***	1.5396***	1.4027***	1.1351***	1.0273***	1.2205***
	(4.14)	(4.72)	(4.62)	(3.24)	(3.02)	(3.66)
_cons	−11.3998***	−24.9716***	−22.6377***	−9.3892***	−1.437	−13.1956***
	(−11.04)	(−14.39)	(−12.22)	(−6.86)	(−0.80)	(−7.32)
R-squared	0.7108	0.7044	0.7018	0.6826	0.707	0.7074
N	696	648	875	648	648	648

Notes:
ASEAN = Association of Southeast Asian Nations; MERCOSUR = the Mercado Común del Sur (Common Market of the South); NAFTA = North American Free Trade Agreement; EU = European Union.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, intra-MERCOSUR and intra-NAFTA results were omitted because of limited observations.

Source: See Table 6.1.

5.3 How High-Skill Intra-ASEAN Migration Influences Postsecondary Education Enrollment (Research Question 3)

Model (6.2) was estimated using the ordinary least squares method (Table 6.7). The adjusted R^2 is low, which suggests the need to either include additional independent variables or modify the model or estimation method. All results show the coefficients of high-skill migration variables are positive and significant at 1%. This was expected. The change in high-skill migration has a positive relationship with the change in human capital stock, which indicates the probability that inter-country migration drives the accumulation of human stock in both source and host countries. The coefficient of the income change variable is insignificant except for the world, which is positive and significant, and extra-ASEAN and intra-EU migration, which are negative and significant. This was unexpected. One interpretation is that it results from economic stagnation and an increase in postsecondary education enrollment in host countries—such as in Japan recently. But this needs to be confirmed.

6. CONCLUSIONS

This chapter clarifies two main points to the literature on high-skill migration within ASEAN. It clarifies the nature of high-skill migration and the relationship between high-skill migration and postsecondary education. The analysis is based on the latest available dataset from 1990 and 2000 provided by Artuc et al. (2015).

First, intra-ASEAN migration was responsible for the lowest proportion of high-skill migration and the second-highest concentration of bilateral corridors among four regional communities—ASEAN, MERCOSUR, NAFTA, and the EU. The findings clarify migration characteristics as indicated by previous studies. In both 1990 and 2000, the concentration of migrants in the top 10 bilateral corridors accounted for more than 85% of the intraregional high-skill migration. In 2000, just over half of total migration flowed from Malaysia to Singapore, up from less than one-third in 1990. Also, there was a modest increase of immigrants into ASEAN countries, but the number of high-skill migrants leaving ASEAN and intra-ASEAN migration nearly doubled.

Second, the results indicate that human capital stock in source countries—not in host countries—may explain high-skill intra-ASEAN migration. However, bilateral high-skill intra-ASEAN mobility explains postsecondary-educated human capital stock in both source and host countries; therefore, high-skill ASEAN mobility could have a positive

Table 6.7 Estimation results for Model (6.2)

Method	Ordinary Least Squares (OLS)						
Model (6.2)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Target Independent variables	World	intra-ASEAN	out ASEAN	out MERCOSUL	out NAFTA	intra-EU	out EU
Skillmigration	0.2858***	0.2625***	0.2801***	0.3310***	0.2748***	0.3794***	0.3236***
	(28.33)	(3.43)	(7.61)	(5.35)	(7.82)	(22.31)	(16.49)
Income	0.1422***	–0.39	–0.3312***	–0.32	0.09	–0.1367**	–0.06
	(5.66)	(–1.51)	(–3.32)	(–1.50)	(0.88)	(–2.09)	(–1.00)
Regional community	–0.2787***						
	(–8.06)						
constant	20.6136***	28.1446***	29.2921***	27.5341***	22.7289***	23.3611***	23.6247***
	(53.85)	(6.96)	(18.36)	(8.16)	(14.26)	(20.65)	(24.86)
Adj. R-squared	0.28	0.27	0.31	0.23	0.32	0.62	0.34
N	2,738	28	130	89	169	314	571

Notes:
ASEAN = Association of Southeast Asian Nations; MERCOSUR = the Mercado Común del Sur (Common Market of the South); NAFTA = North American Free Trade Agreement; EU = European Union.
Values are the average of bilateral corridors. "Intra" means migration within the region; "Out" means migration from one region to another.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, intra-MERCOSUR and intra-NAFTA were omitted because of limited observations.

Source: See Table 6.1.

two-way relationship with greater investment in postsecondary education in source countries.

There are several policy implications. First, there are reasons to encourage high-skill intra-ASEAN migration: (i) it tends to increase postsecondary education enrollment in source countries—given the low level of current high-skill intra-ASEAN mobility compared with MERCOSUR, NAFTA, and the EU. Therefore, high-skill intra-ASEAN migration benefited the accumulation of human capital from 1990 to 2000 throughout the region, compared with the three other regions. It makes sense to discuss migration and postsecondary education policies together.

Second, high-skill migration into ASEAN should be investigated further as there was only a modest increase compared with both intra-ASEAN and extra-regional migration. This goes beyond the AEC's focus on intra-ASEAN migration. However, high-skill migration to ASEAN relates directly to its competitiveness—and could relate to intra-ASEAN migration as it picks up. Trends have likely changed since 2000. Longer time series data would make analysis available for causality relationships between regional high-skill migration and postsecondary-educated human capital accumulation. Also, international study makes a difference. The rise in international study is an important driver for high-skill migration in Asia (ADBI 2014) and could be for ASEAN in particular.

NOTES

1. This is understandable as the policy and research debate on migration and development has swung back and forth like a pendulum (de Haas 2012).
2. The HHI is calculated as HHI = $s1^2 + s2^2 + s3^2 + \ldots + sn^2$ (where sn is the market share of the i^{th} firm). If the firm has 100% market share, HHI equals 10,000 (100^2), indicating a monopoly.

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