

Demand for Malaysian Higher Education among ASEAN Countries: An Income Classification based Analysis

(Permintaan terhadap Pendidikan Tinggi Malaysia dalam kalangan Negara-Negara ASEAN: Satu Analisa Berasaskan Klasifikasi Pendapatan)

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ABSTRACT

In 2009, Malaysia was ranked as the world's 11th higher education exporter. However, only 2% of international students enrolled in Malaysia for the same year. In addressing the problem, this research proposes an analysis of Malaysia's higher education demand from a macro perspective. This is important in getting a holistic view on the international demand for the country's higher education industry, as well as complementing existing micro-researches which specialize in individual demand. All importers (ASEAN countries) have been classified based on the World Bank's income classification, namely low-income, lower-middle-income, upper-middle-income and high-income. Three variables namely per capita income, consumer price index and physical distance are used in describing the demand. The findings of the study prove that different income classification results in different demand. The identification of high-potential importing countries is essential in achieving a total of 200,000 international enrolments by 2020, as outlined in the Malaysia economic transformation program.

Keywords: Higher education; international student; gravity model; Malaysia; ASEAN

ABSTRAK

Pada tahun 2009, Malaysia disenaraikan sebagai negara pengeksporth pendidikan tinggi ke-11 dunia. Walaubagaimanapun, hanya 2% pelajar antarabangsa yang berdaftar di Malaysia, bagi tahun yang sama. Bagi mengatasi masalah ini, penyelidikan ini mencadangkan penganalisaan secara makro. Ini penting bagi mendapatkan pandangan yang holistik tentang permintaan antarabangsa terhadap industri pendidikan tinggi negara, selain melengkapi penyelidikan sedia ada yang bersifat mikro dan mengkhusus pada permintaan secara individu. Kesemua pengimport (negara-negara ASEAN) dibahagi berdasarkan kepada klasifikasi pendapatan yang ditetapkan oleh Bank Dunia iaitu pendapatan rendah, pendapatan sederhana bawahan, pendapatan sederhana atasan dan pendapatan tinggi. Sebanyak tiga pembolehubah iaitu pendapatan per kapita, indeks harga pengguna dan jarak fizikal digunakan dalam menerangkan permintaan ini. Penemuan kajian membuktikan yang klasifikasi pendapatan yang berbeza menghasilkan permintaan yang berbeza. Pengenalpastian negara-negara pengimport berpotensi tinggi ini penting bagi mencapai sejumlah 200,000 enrolmen antarabangsa pada tahun 2020, seperti yang digariskan dalam program transformasi ekonomi Malaysia.

Kata Kunci: Pendidikan tinggi; pelajar antarabangsa; model graviti; Malaysia; ASEAN

INTRODUCTION

Global demand for tertiary education is experiencing phenomenal growth. Bohm et al. (2002) estimated based on the 1.8 million international students in 2000 that it would quadruple to 7.2 million by 2025. As reported by UNESCO (2014), two out of every 100 student enrolments in higher education institutions studied abroad in 2013. Even in countries such as

Bermuda, Luxembourg, and Seychelles, more students studied abroad than in their home countries. Moreover, Central Asia recorded the highest outbound mobility ratio of 7.6%, and its enrolment was dispersed worldwide. In contrast, most sub-Saharan Africa citizens studied closer to home, but the region still placed second with a ratio of 4.0%. According to another source, domestic students studying abroad represented approximately 20% of the total enrolment

in tertiary education for 34 countries, as highlighted in Vincent-Lancrin (2007).

In 2009, Malaysia was globally ranked as the eleventh highest exporter of higher education (Nga 2009). A massive boost in enrolment in Malaysian private higher education institutions and more enrolments from neighbouring countries were among the leading factors for this increase (Tan 2002). The rank, however, does not reflect the actual number of international students. Only 2% of the total number of international students chose Malaysia as their destination for higher education (Azh 2011). This percentage is far from sufficient, as Malaysia aims to have 200,000 international students by 2020, as emphasised by the International Consultants for Education and Fairs or ICEF (ICEF 2012). The same report underlined the capability of higher education in cushioning the impact of the economic downturn as experienced by Malaysia in 1997/1998. Furthermore, the Malaysian economic system is driven by the service sector and strengthening the education industry may accelerate economic growth.

International student enrolment is a top concern in Malaysian higher education. Mohamed (ed.) (2009) was the first official report on international students in Malaysia. The report which was prepared for the Malaysian Ministry of Education (which was formerly known as Ministry of Higher Education) focused on several factors, including daily cost, safety and security, IT networking, English proficiency, friendly surroundings, and food variety. It also discussed the issues and problems arising among international students. On the same year, a study specifically on international postgraduate enrolments in Malaysia was written by Dora et al. (2009). Samples were taken from six public universities, and the investigation revealed that finance and culture were among the pulling factors and were more crucial compared to academic quality and location. Padlee et al. (2010) and Baharun et al. (2011) analysed the pattern of international student enrolments in private universities. The focus has been directed toward students, institutions, and environments, and the results have varied.

Wai et al. (2012) examined the same issue but in public universities. They concluded that institutional type is the most important factor considered by students. Another study by Migin et al. (2015) highlighted that institutional characteristics, such as academic reputation and facilities, are significant in influencing more international students to study in Malaysian private education institutions. At an institutional level, Othman et al. (2018) analysed seven factors which may attract international students to Universiti Malaysia Sabah. As a result, new experience, seeing the outside world and institution culture are the most relevant factors. The samples, however, limited to the first-year international students. In a recent study, Chelliah et al. (2019), divides the attracting factors into two, which are a physical factor and social factor. Out of the six variables used, only four

have positive relationships with international exchange students' satisfaction, which are a student–lecturer attachment, personal safety, price/fee, and physical environment.

As highlighted, the official report on international demand for Malaysian higher education has been released since 2009. Also, public and private institutions have been selected as samples for various studies, and views concerning students, institutions, the surrounding environment, and socioeconomic factors have been considered. However, most of these studies had a micro perspective and were somewhat limited in their analysis. Malaysia, the host country, has not been portrayed clearly as a factor in attracting student enrolments. In other words, very little attention has been given to macro perspectives of demand. Failure to examine the macro view may lead to an imbalanced analysis and limit the scope of studies, as highlighted in Chen and Barnett (2000) and Zheng (2014). Even in other reviews, the student trans-border movement has been described as part of international human capital mobility and the best way to analyse it is using macro analysis (Naidoo 2007; González et al. 2011; Whei 2013). A country's socioeconomic variables such as per capita income, exchange rate, and nominal wage, are also important matters when examining factors for attracting international student enrolments. Though Padlee et al. (2010) and Baharun et al. (2011) attempted to include the exchange rate as an item in their questionnaires, the findings focus on respondents' perceptions and not the real impact on total enrolment.

Due to the literature gaps, there is a need to explore the factors contributing to international student enrolments in Malaysian higher institutions of learning from a macro perspective using secondary data analysis. Furthermore, it is crucial to produce a balanced analysis of demand for Malaysian tertiary education, as well as complementing existing micro-based researches. Similar to tourism, Malaysia is the exporter country while other countries are the importers, even though the activities took place in Malaysia. As this is a regionally-based study, the importing countries were selected from the Association of Southeast Asian Nations or ASEAN. The samples were classified into four different income groups (low-income, lower-middle-income, upper-middle-income, and high-income). Demand for each group was determined by three variables which were per capita income, consumer price index and physical distance. The analysis revealed the macro factors that encourage international students to choose Malaysia as their destination for furthering studies, rather than their home countries.

LITERATURE REVIEW

Most studies model the demand for higher education using student enrolments. The earliest study was

initiated by Campbell and Siegel (1967) on demand for higher education in the United States using undergraduate aggregate enrolment data to outline the pattern of national education from 1919 to 1964. Through income and price variables, Campbell and Siegel successfully explained 87% of the variation in the demand for higher education. Hoernack (1967) added a variable on the number of graduates in high school to consider the schooling effect on the enrolment of local students attending the University of California. Corazzini et al. (1972) later concluded that a significant relationship exists between socioeconomics and college enrolment. An academic variable on test performance was also considered. Kohn et al. (1972) used a systematic analysis by differentiating variables into three significant categories: cost, academic quality, and quality of life. A dummy variable for the difference between public and private universities and the length of the programme makes the paper more interesting and adds to the discussion. On the other hand, Hoernack and Weiler (1975) and Hight (1975) reapplied the earliest ideas on demand for higher education. Though only income and price were analysed, the range for the coefficient of determination lies between 52% and 97%.

The initial study involving international student mobility was conducted by Agarwal (1983). Associated with Sjaastad's (1962) human capital theory of migration, people tend to move if the return is higher than the cost invested. A cost-benefit analysis was the fundamental basis of this study. Agarwal and Winkler (1985) performed a separate detailed analysis of the enrolment of undergraduates and postgraduates from 15 countries in the Eastern Hemisphere of the United States. As a conclusion, there was a massive increase in enrolment for 30 years (1954-1984) due to the inadequacy places at tertiary level, especially in the non-industrialized countries around the world. In the 2000s, a study by Naidoo (2007) proposed for three different reasons on international mobility, namely culture, economy and politics. The same paper suggested the use of macro variables in the model to illustrate the characteristics of both importer countries and exporting countries in the higher education industry. On the other hand, Gesing and Glass (2019) used micro variables such as better job opportunities and wanted to experience living abroad as part of their push-pull factors model. The economic reason is the best pull factor in studying in the United States, while another four causes (social, socio-economic, socio-political and political) push them back to their origin countries.

The use of gravity model as the basis of international student mobility was proposed by González et al. (2011). The study explained that tertiary student flows between participating countries under the *Erasmus programme*. Based on the findings, if the gravity model was best used in immigration and emigration matters,

it is also accommodating in the field of trans-border education, as it involves the same samples, which are human beings. Initially, Tinbergen (1962) adapted the famous Newton's Law of Universal Gravitation in the international trade area. He suggested that the flows of trade between the two countries are positively related to their economics masses and negatively related to their distance. Though the earlier gravity model studies were limited in explaining the movement of physical commodities from one country to another, such as studies by Pöyhönen (1963) and Abrams (1980), the pattern changed tremendously. More fields apply the same model, including in the areas of foreign investment (Kahouli & Maktouf 2015), trans-border agro-tourism (Santeramo & Morelli 2016), air passenger traffic (Zhang & Zhang 2016), local tourism (Voltes-Dorta et al. 2016), skilled worker movement (Czaika & Parsons 2017), renewable energy industry (Kuik et al. 2019), mushroom picking industry (de Frutos et al. 2019), and even in a cancer study (Cheng et al. 2015).

In fact, the gravity model applies to tertiary education as early as the 1920s. Kelley (1921) for example, emphasised the importance of distance in determining the construction of new colleges in the U.S. It was empirically proven when enrolment in four major colleges in the U.S. was negatively related to the distance between the residency and the college (Stewart 1941). Zheng (2014) also used the same model in explaining international student mobility between 42 countries and the U.K. higher education institutions for the 1994-2008 period. Among its conclusions, U.K. higher education needs to focus more on importing countries with a huge young population. In the Netherlands, socioeconomic factors are part of the gravity model used to estimate the demand for higher education (S'a et al. 2004). The urbanisation process in some parts of the Netherlands attracts foreign students, despite the long distance and high cost of living. Abbott and Silles (2016) applied time zone difference in replacing the physical distance in the model and grouped the home countries into non-high-income countries and high-income countries. In analysing the presence of local students in major Italian universities, the gravity model has been applied by Cattaneo et al. (2019). Local universities located within close proximity have fierce competition among them, in catering decreasing needs for tertiary education since economic crises in 2008, is one of the findings.

As described in Campbell and Siegel (1967), income and cost are the basis for higher education demand model. This model was further developed by incorporating several additional quantitative and qualitative factors. At the same time, distance is the fundamental element in the gravity model. It illustrates the length between two different points. All these three variables (income, cost, and distance), can be represented by various types of proxies, depending on the methodologies and samplings. All these are explained in the next paragraphs.

For income, most micro studies have used household income, while per capita income has been used in patterning the macro demand for higher education. Earlier studies such as those by Hoernack (1967) used median family income, while Corazzini et al. (1972) applied average earnings, Spies (1973) used annual family income, and Hight (1975) employed real disposable income per household. All these studies record a positive relationship with higher education demand. From another perspective, the per capita income has been used in the studies by Agarwal (1983), Lee and Tan (1984), Agarwal and Winkler (1985), Chadee and Naidoo (2009), Bessey (2012), Perkins and Neumayer (2014), Kritz (2015), Yang and Wang (2016), Min and Falvey (2018), and Arif and Hall (2019). Although the results are mixed, most record a positive relationship. In choosing the best proxy between per capita gross domestic product (GDP) and per capita gross national product (GNP) for this study, we propose per capita GNP since it characterises the development and consumption levels of each country as suggested in Cummings (1984), Chen and Barnett (2000), Asari et al. (2011), and Gesing and Glass (2019). This is in line with the World Bank practice of using per capita GNP, which is officially known as per capita GNI, in differentiating the income level between countries into four different groups, ranged from low-income countries to high-income countries.

In terms of the cost, it is associated with the tuition fee charged by the corresponding institutions reflects the price of higher education at the micro level. This was proposed in earlier studies, including Campbell and Siegel (1967), Hoernack (1967), Corazzini et al. (1972), Spies (1973), and Hight (1975). Most of these studies record a negative relationship between price and demand for higher education. On the other hand, average tuition fee has been used in macro studies, e.g., Agarwal (1983), Agarwal and Winkler (1985), Naidoo (2007), and Chadee and Naidoo (2009) and the results are negative. At the same time, Lee and Tan (1984), Ahmad and Buchanan (2016) and Ahmad and Shah (2018) proposed another type of price, which is the living cost. In another study, Whei (2013) used purchasing power parity as a proxy, while Zheng (2014) applied the exchange rate to portray the burden of international students residing in the U.K. Since our study explores the trans-border higher education demand, the tuition fee is not the only price to consider. Instead of using “price”, which only represents tuition fees as discussed in the study by Campbell and Siegel (1967), the broader scope of cost must be considered. Living cost is another critical element to consider. At the same time, the tuition fee is strongly related to living cost. As a result, the consumer price index (CPI) has been suggested as a variable under the cost item as applied in Rodríguez et al. (2012), Beine et al. (2014), and (Bento 2014).

For distance, it explains the obstacle for any bilateral trade between two different parties. It comes in multiple

forms such as mileage through a specific route (roadway, waterway, railway, and airway) and the fuel used by a transportation medium (Isard 1960). Generally, distance negatively influences trade. In the context of international student mobility, an increase in distance decreases international student enrolments. This has been proven in the studies by Lee and Tan (1984), González et al. (2011), Bessey (2012), Bouwel and Veugelers (2013), Zheng (2014), and Abbott and Silles (2016). These studies used the physical distance between the capital city of the host country and the capital city of the origin country to measure the barrier for international student mobility. Meanwhile, demand for local tertiary students was estimated by Levatino (2017), and Cattaneo et al. (2019), based on the physical distance between the local cities and the local universities. From a contradicting perspective, distance is less important when considering other factors as determined by Mazzarol and Soutar (2002), Li and Bray (2007), Bodycott (2009), Miglin et al. (2015), and Kouba (2019). The distance factor may also influence in other ways, which are caused by regional and remoteness effects, as explained in the study by S'a et al. (2004). Since this study highlights bilateral relations, we apply the physical distance between Kuala Lumpur, Malaysia's capital city, and the capital city in the respective ASEAN countries.

METHODOLOGY

RESEARCH FRAMEWORK

For this study, the theory of higher education demand by Campbell and Siegel (1967) and the adapted gravity model by Tinbergen (1962) have been combined to form an analytical framework that suits the objectives of this research. Using a macro perspective, A is the home country (ASEAN individual country), while M represents Malaysia, the host country. The two variables in Campbell and Siegel (1967) of income and cost are represented by per capita gross national income (GNI) and consumer price index (CPI). Distance, as part of the gravity model, has been inserted as the third variable to measure the distance between ASEAN country A 's capital and Malaysian capital (Kuala Lumpur). All the variables are compiled into a single framework shown in Figure 1.

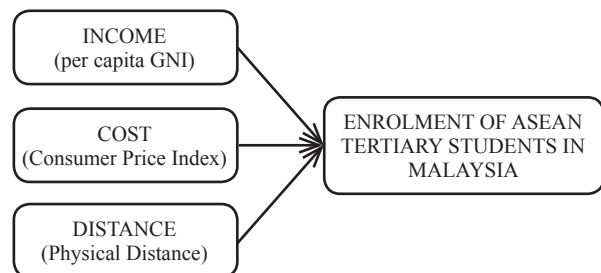


FIGURE 1. Research framework

MODEL AND VARIABLES

This study model the tertiary enrolments from ASEAN countries in Malaysian higher education institutions. The model comprises of one dependent variable and three independent variables. It is based on a macroeconomic panel dataset for nine ASEAN countries throughout eight years between 2003 and 2010. During this period, a special ministry for higher education was created following a cabinet reshuffle by the fifth Malaysian premier (Kassim 2015). All departments related to higher education were taken out of the Ministry of Education and later combined under the new Ministry of Higher Education.

Furthermore, it was the last eight-year period before Malaysia was placed in the 11th ranking as the world's top higher education exporter (Nga 2009). It is also in line with the second phase of globalisation and the liberalisation of Malaysia's higher education, as highlighted in Asari et al. (2017). This second phase tells how the country's higher education turns into the Export-Oriented Industrialisation (EOI) and acts as an international trade commodity, rather than just the Import-Substitution Industrialisation (ISI) in the earlier phase.

Three different equations have been constructed. Equation 1 shows the combined demand (Total) for Malaysian tertiary education by ASEAN students in both public higher education institutions and private higher education institutions. Equation 2 demonstrates the demand by ASEAN students in Malaysian public higher education institutions (PbHEIs), while equation 3 reveals the demand by ASEAN students in Malaysian private higher education institutions (PrHEIs). The three econometric equations are written as follows:

Total enrolments:

$$\ln^{ASEAN}(Total)_{i,t} = \alpha + \beta_1 \ln(pcGNI_A * pcGNI_M)_{i,t} + \beta_2 \ln(CPI_M/CPI_A)_{i,t} + \beta_3 \ln(DIST_{AM})_{i,t} + U_{i,t} \quad (1)$$

For PbHEIs enrolments:

$$\ln^{ASEAN}(PbHEIs)_{i,t} = \alpha + \beta_1 \ln(pcGNI_A * pcGNI_M)_{i,t} + \beta_2 \ln(CPI_M/CPI_A)_{i,t} + \beta_3 \ln(DIST_{AM})_{i,t} + U_{i,t} \quad (2)$$

For PrHEIs enrolments:

$$\ln^{ASEAN}(PrHEIs)_{i,t} = \alpha + \beta_1 \ln(pcGNI_A * pcGNI_M)_{i,t} + \beta_2 \ln(CPI_M/CPI_A)_{i,t} + \beta_3 \ln(DIST_{AM})_{i,t} + U_{i,t} \quad (3)$$

Detailed explanations of each variable and the symbols used are available in Table 1.

DATA RETRIEVAL

The international demand for higher education is manifested by the enrolment of ASEAN tertiary students in Malaysian public higher education institutions and private higher education institutions. The data was retrieved from the Malaysian Ministry of Education website¹. The importer countries include nine ASEAN countries, namely Singapore, Thailand, Indonesia, Brunei Darussalam, Philippines, Cambodia, Vietnam, Lao P.D.R., and Myanmar.

The per capita gross national income (pcGNI) data were retrieved from the World Bank Open Data website². This variable enters the model in a multiplicative form, as suggested in the gravity model. The calculation can

TABLE 1. Variables, symbols and definitions

Variable	Symbol	Definition
Dependent	<i>ASEAN</i>	Association of Southeast Asian Nations
Independent I	<i>pcGNI_A</i>	Per capita gross national income of ASEAN country A
	<i>pcGNIM</i>	Per capita gross national income of Malaysia
Independent II	<i>CPI_A</i>	The consumer price index of ASEAN country A
	<i>CPIM</i>	The consumer price index of Malaysia
Independent III	<i>DIST_{AM}</i>	Distance between the Malaysian capital and ASEAN country A's capital
	α	Constant term
	β	Coefficient term
	$U_{i,t}$	Random error term
	\ln	Log natural
	<i>A</i>	ASEAN country A
	<i>M</i>	Malaysia
	<i>Total</i>	Total enrolments in Malaysian public higher education institutions and private higher education institutions by ASEAN students
	<i>PbHEIs</i>	Enrolments in Malaysian public higher education institutions by ASEAN students
	<i>PrHEIs</i>	Enrolments in Malaysian private higher education institutions by ASEAN students

be defined as $pcGNI_A * pcGNI_M = pcGNI_{AM}$. It is valued in U.S. dollars. It represents the economic masses of both Malaysia and the origin country. The expected sign is positive since residents of wealthier countries will “buy” cheaper education elsewhere compared with their own countries.

The World Bank, Open Data website, was the source for the consumer price index (CPI) data³. The CPI of the ASEAN country (CPI_A) and the CPI of Malaysia (CPI_M) enter the model in a divisional form, where $CPI_M/CPI_A = CPI_{AM}$. It is valued as a ratio. It represents the relative cost of living between Malaysia and the origin country. The expected sign for this variable is negative, as the bigger ratio will reflect in a higher cost for ASEAN students to study in Malaysia.

Data on distance were generated using the distance calculator available from the distancecalculator.net portal⁴. It measures the physical distance between the Malaysian capital (Kuala Lumpur) and the ASEAN country A 's capital using latitude and longitude information. It is stated in kilometres. An inverse relationship with international student enrolments is expected since the greater the distance, the higher the transportation cost.

INCOME CLASSIFICATION

Based on the World Bank practice, each country is classified according to its per capita gross national income (GNI). Generally, there are four types of classifications; namely *low-income*, *lower-middle-income*, *upper-middle-income* and *high-income*. The income range for each group varies every year, and it indicates the economic performance of each country. For example, the bottom line for high-income countries was USD11,905 in 2008, before it increased to USD12,195 in 2009 and USD12,275 in 2010. Full details are available in Table 2.

DATA PROCESSING

All data were compiled in spreadsheets with regards to the type of countries, institutions and incomes for

preliminary analysis. Then, separate sets of data (Total, PbHEIS and PrHEIS) for four groups of importers (low-income, lower-middle-income, upper-middle-income and high-income) were processed using static panel data analysis with the assistance of Stata 14. All variables have been logged to minimise the skewness effect and for uniformity in explanation among variables. In choosing between Pooled Ordinary Least Squares (POLS) and Random Effects Model (REM), Breusch-Pagan (BP) test has been applied. On the other hand, Hausman-Fixed (HF) test has been used in selecting between Random Effects Model (REM) and Fixed Effects Model (FEM). Multicollinearity, heteroscedasticity, and serial correlation are the fundamental statistical problems that need to be analysed and addressed correctly. For multicollinearity, the variance inflation factor (VIF) test has been conducted to determine the relationship between independent variables. In the case of heteroscedasticity, Wald test was a diagnostic tool. Meanwhile, the Wooldridge test was applied to detect the existence of a serial correlation problem.

RESULT AND DISCUSSION

As guided by the World Bank's Income Classification, all nine importing ASEAN countries have been clustered into the four income groups, on a yearly basis, as shown in Table 3. For the low-income countries, there were four dominant countries, namely Cambodia, Lao P.D.R, Myanmar, and Vietnam, for the period of 2003-2008. For the lower-middle-income countries, Indonesia, Philippines, and Thailand were the members before joined up by Vietnam in 2009 and Lao P.D.R in 2010. In the extreme case, Thailand was the only importing countries country that successfully penetrated the upper-middle-income group in 2010. Meanwhile, Brunei Darussalam and Singapore were in a class of their own (high-income countries) for eight years in a row.

All ASEAN countries sent their students to Malaysia for the period of 2003-2010. Sharing the same characteristic with tourism; the activities take place

TABLE 2. Income classification by the World Bank (in U.S. Dollar) (2003-2010)

Classification	Year							
	2003	2004	2005	2006	2007	2008	2009	2010
Low-income	<= 765	<= 825	<= 875	<= 905	<= 935	<= 975	<= 995	<= 1,005
Lower-middle-income	766	826	876	906	936	976	996	1,006
	-	-	-	-	-	-	-	-
	3,035	3,255	3,465	3,595	3,705	3,855	3,945	3,975
Upper-middle-income	3,036	3,256	3,466	3,596	3,706	3,856	3,946	3,976
	-	-	-	-	-	-	-	-
	9,385	10,065	10,725	11,115	11,455	11,905	12,195	12,275
High-income	> 9,385	> 10,065	> 10,725	> 11,115	> 11,455	> 11,905	> 12,195	> 12,275

Source: World Bank (databank) website⁵ (2017)

TABLE 3. ASEAN importing countries by income classification (2003-2010)

Classification	Year							
	2003	2004	2005	2006	2007	2008	2009	2010
Low-income	Cambodia	Cambodia	Cambodia	Cambodia	Cambodia	Cambodia	Cambodia	Cambodia
	Lao P.D.R	Lao P.D.R	Lao P.D.R	Lao P.D.R	Lao P.D.R	Lao P.D.R	Lao P.D.R	Myanmar
	Myanmar	Myanmar	Myanmar	Myanmar	Myanmar	Myanmar	Myanmar	
	Vietnam	Vietnam	Vietnam	Vietnam	Vietnam	Vietnam	Vietnam	
Lower-middle-income	Indonesia	Indonesia	Indonesia	Indonesia	Indonesia	Indonesia	Indonesia	Indonesia
	Philippines	Philippines	Philippines	Philippines	Philippines	Philippines	Philippines	Lao P.D.R
	Thailand	Thailand	Thailand	Thailand	Thailand	Thailand	Thailand	Philippines
							Vietnam	Vietnam
Upper-middle-income	nil	nil	nil	nil	nil	nil	nil	Thailand
High-income	Brunei	Brunei	Brunei	Brunei	Brunei	Brunei	Brunei	Brunei
	Darussalam	Darussalam	Darussalam	Darussalam	Darussalam	Darussalam	Darussalam	Darussalam
	Singapore	Singapore	Singapore	Singapore	Singapore	Singapore	Singapore	Singapore

in the host/exporter country, which is Malaysia. This rendered the nine ASEAN countries as importers of Malaysian higher education. Based on the total number of enrolments, Indonesia was the biggest importer with four-digit enrolments each year. Meanwhile, Lao P.D.R was the smallest importer with an average value of 26 students annually. Four countries (Indonesia, Singapore, Philippines, and Cambodia) depicted a positive growth of enrolments. For Thailand, the numbers of enrolment were below 1,000 for the first half (2003-2006), before increasing to four-digits in the next four years. Mixed situations occurred for Myanmar and Vietnam as both countries recorded an increase in enrolments between 2003-2006 before the numbers declined in 2007 and 2008, and increased again in 2009-2010. The enrolments are shown in Figure 2 (for Indonesia only) and Figure 3 (excluding Indonesia).

In Figure 4, there was continuous growth of total (Total) student enrolments from ASEAN countries for the period of 2003-2010. The smallest enrolments recorded were 8,350 in 2003, while the peak value was achieved in 2010 with some 14,654 students. The same pattern was experienced by both public higher education institutions (PbHEIs) and private higher education institutions (PrHEIs), except for a slight 5% decline in PrHEIs enrolments in 2007 as compared to 2006. This shortfall, however, was successfully accommodated by the considerable increase of admissions in public institutions of about 53% for the same year. In the 2003-2006 period, for every ten ASEAN students enrolled in Malaysian higher education institutions, seven enrolled in PrHEIs. In the next four years (2007-2010), the ratio changed to 6:4 as the PbHEIs received more ASEAN students for that period.

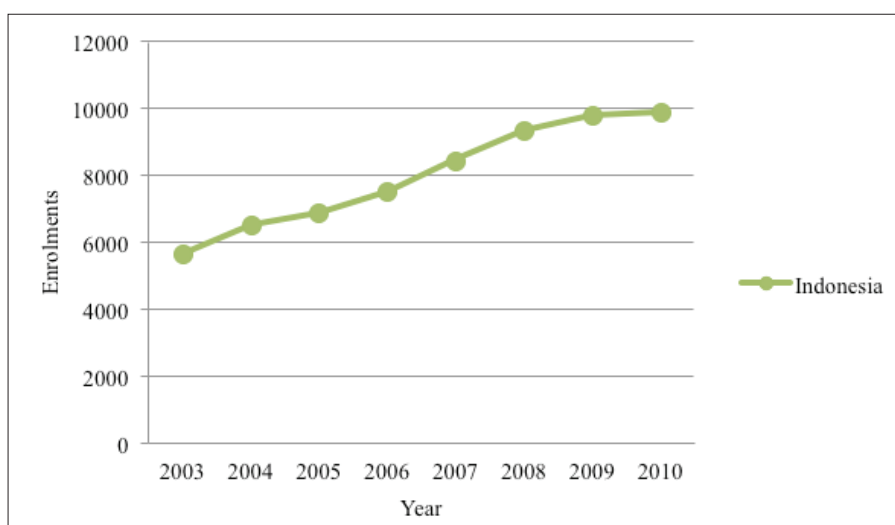


FIGURE 2. Enrolments by ASEAN countries (Indonesia only)

Source: Malaysia Ministry of Education website (2017)¹

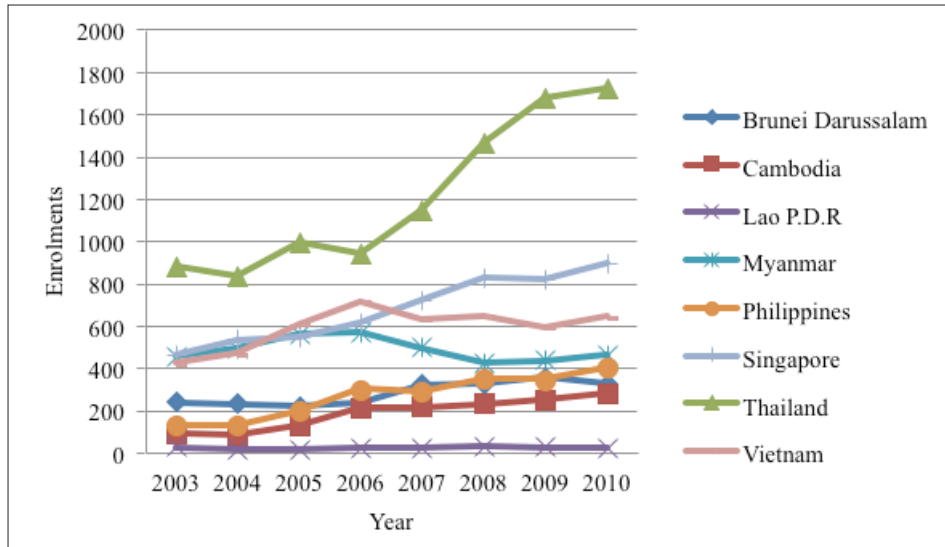


FIGURE 3. Enrolments by ASEAN countries (excluding Indonesia)

Source: Malaysia Ministry of Education website (2017)¹

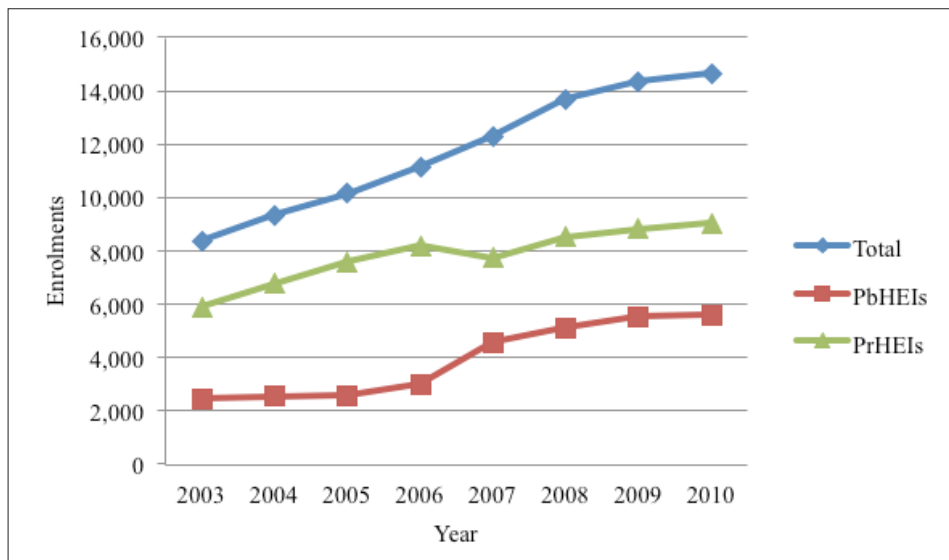


FIGURE 4. Enrolments by type of institutions

Source: Malaysia Ministry of Education website (2017)¹

In explaining enrolments by income classification, four figures (Figure 5 – 8) have been illustrated. In Figure 5, the patterns for both enrolments (Total and PrHEIs) were similar for low-income countries. The statement cannot be rejected as 80% of enrolments came from private institutions. There was a surging pattern for both types for the first four years, before the numbers decreased in the second term. One of the possible causes was a decrease in several countries from four (Cambodia, Lao P.D.R, Myanmar and Vietnam) in 2003-2008, to three in 2009 (Cambodia, Lao P.D.R and Myanmar), and to two (Cambodia and Myanmar) in 2010. Enrolments in PbHEIs, however, remain stable with the smallest number being 142, and the biggest value was 232.

For the lower-middle-income countries, there was an increased growth for both institutions (PbHEIs and PrHEIs) from 2003 to 2004, as presented in Figure 6. There were fluctuate situations in a period of 2003-2005 for PbHEIs. However, the enrolments hiked back in 2006. In contrast, PrHEIs enrolments decreased temporarily in 2007, before rising again in 2008. Both enrolments achieved their peaks in 2009, as Vietnam became the fourth member of this income classification together with Indonesia, the Philippines and Thailand. Both enrolments, however, dropped as Thailand became an upper-middle-income country in 2010. This reduced 1,700 student enrolments from the group in the same year. Even though Lao P.D.R became the latest member of the lower-middle-income

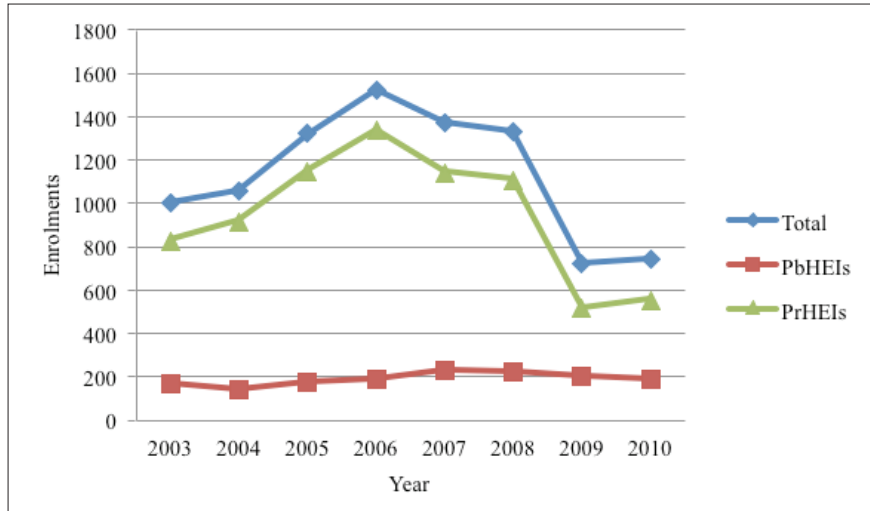


FIGURE 5. Enrolments by ASEAN low-income countries

Source: Malaysia Ministry of Education website (2017)¹

group, enrolment from this country could not replace the deficit left by Thailand.

For the upper-middle-income classification, only Thailand successfully made the group in the year 2010. The ratio was almost split when 54% of Thai students enrolled in PrHEIs, while the remaining 46% enrolled in public institutions as depicted in Figure 7. At the same time, information on this group cannot be analysed due to insufficient data. Thus, this group has been dropped from further estimation analysis.

Though there were only two countries which were Brunei Darussalam and Singapore for the high-income

group, the enrolment patterns were mixed. For the first four years, more students enrolled in private institutions. The direction of the enrolments, however, changed in the next four years (2007-2010) as detailed in Figure 8. More students preferred public institutions as compared to the past. The difference was mostly caused by the shift of preference among Singapore students, while Bruneian students preferred private higher education institutions for the eight years.

Nine separate analyses were undertaken. For each group (low-income, lower middle-income and high-income), three different estimations were made

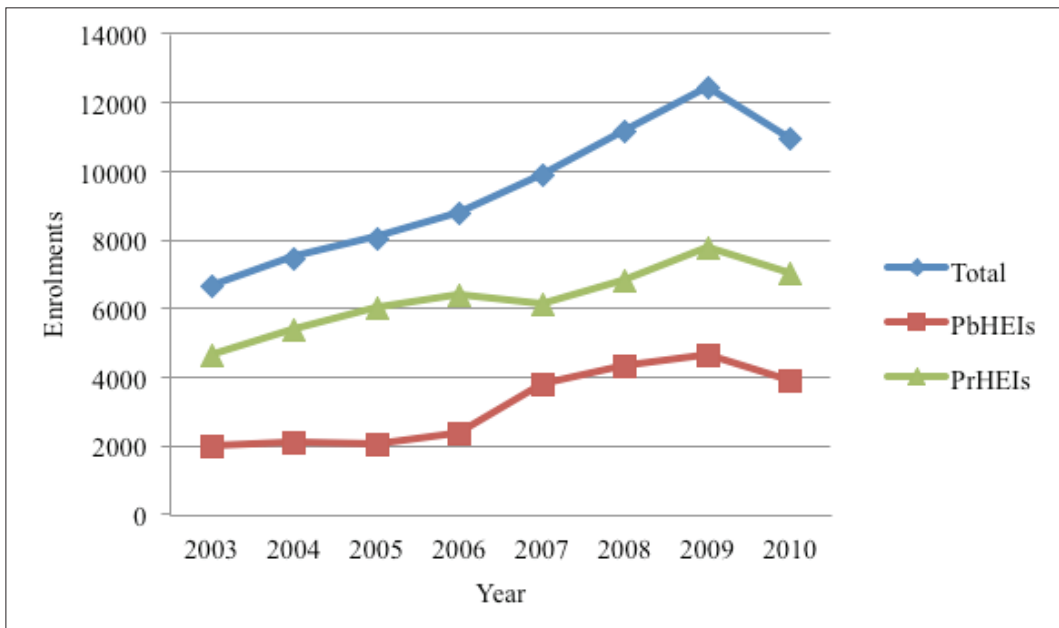


FIGURE 6. Enrolments by ASEAN lower-middle-income countries

Source: Malaysia Ministry of Education website (2017)¹

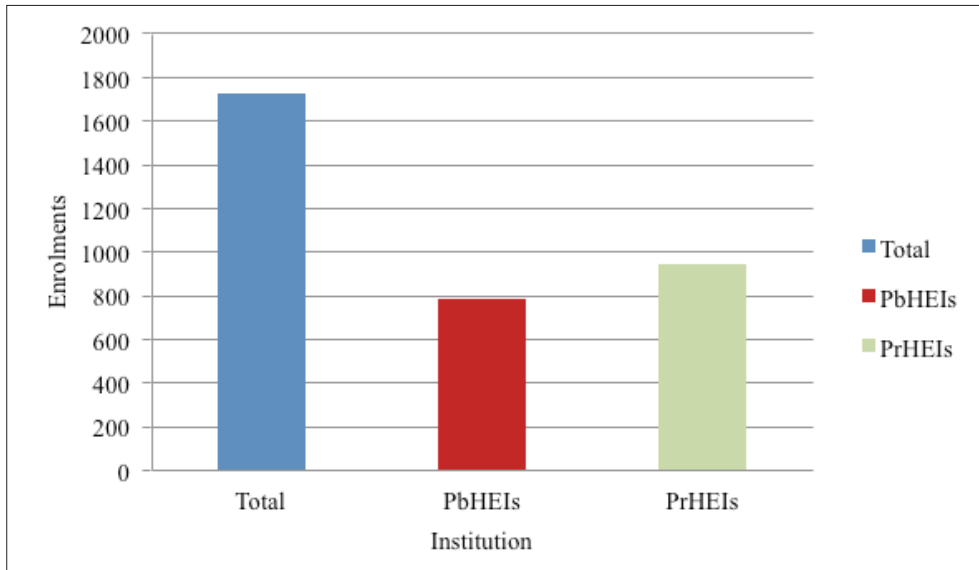


FIGURE 7. Enrolments by ASEAN upper-middle-income countries

Source: Malaysia Ministry of Education website (2017)¹

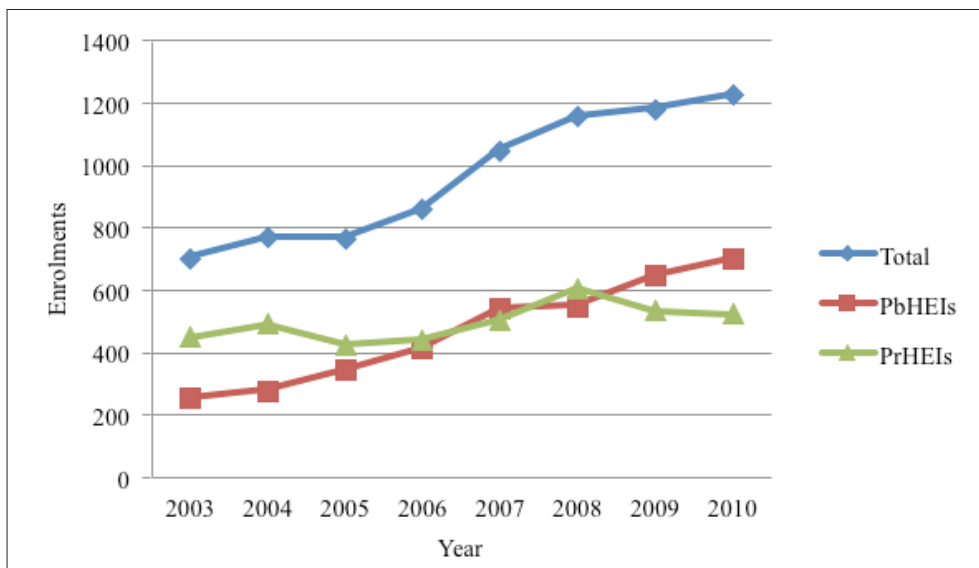


FIGURE 8. Enrolments by ASEAN high-income countries

Source: Malaysia Ministry of Education website (2017)¹

(Total, PbHEIs and PrHEIs). The total symbol represents combined enrolments in Malaysian public higher education institutions and private higher education institutions by ASEAN students. At the same time, PbHEIs is for enrolments in Malaysian public higher education institutions by ASEAN students, and PrHEIs is for enrolments in Malaysian private higher education institutions by ASEAN students. Since Thailand was the only country for the upper-middle-income group, the particular data for that income group was less than enough to be estimated. List of all ASEAN importing countries is available in the earlier Table 3. For the

Breusch-Pagan (BP) test and Hausman-Fixed (HF) test, the most appropriate model for each data, either Pooled Ordinary Least Squares (POLS), Random Effects Model (REM), or Fixed Effects Model (FEM), is presented in Table 4. In details, fail to reject a null hypothesis in the BP test, requires a model to be further analysed using POLS. On the other hand, REM is the best analysis for a model, if a null hypothesis of HF test, cannot be rejected.

Variance inflation factor (VIF) values were less than 5 for all datasets. Thus, no multicollinearity was detected. However, two diagnostic problems have been identified

TABLE 4. Panel specification tests

Variable	Low-Income			Lower Middle-Income			High-Income		
	Total	PbHEIs	PrHEIs	Total	PbHEIs	PrHEIs	Total	PbHEIs	PrHEIs
BP test p-value	1.00	1.00	1.00	0.14	0.44	0.04	1.00	1.00	1.00
HF test p-value	0.00	0.00	0.00	0.48	0.06	0.53	-0.00	1.00	-0.00
Appropriate Model	POLS	POLS	POLS	POLS	POLS	REM	POLS	POLS	POLS

in several data, as shown in Table 5. The problems were detected using a Wald test (for heteroscedasticity) and Wooldridge test (for serial correlation). The symbol H represents heteroscedasticity and the sign SC for serial correlation. In treating data with heteroscedasticity problem, the panel regression with robust option has been used. On the other hand, for data with both heteroscedasticity and serial correlation problem, the panel regression with cluster option has been applied. The estimated values for all nine types of data are reported in Table 6.

As shown in Table 6, all nine models are statistically significant at 1% level based on the probability value

of F-test. For variables, per capita GNI represents by $pcGNI_{AM}$ is significant in seven out of nine datasets. Most of the significance levels (1%) are reported in low-income countries. For the lower-middle-income and high-income, the groups recorded three different levels of significance. Meanwhile, the consumer price index (CPI), which uses CPI_{AM} as a sign in the model, is only significant in three datasets. All significant values come from three types of enrolment in low-income countries. In another case, distance ($DIST_{AM}$) recorded seven significant mixed values, same like per capita GNI. However, six out of seven values are detected in the lower-middle-income group and high-income group.

TABLE 5. Diagnostic tests

Variable	Low-Income			Lower Middle-Income			High-Income		
	Total	PbHEIs	PrHEIs	Total	PbHEIs	PrHEIs	Total	PbHEIs	PrHEIs
VIF value	2.43	2.43	2.43	2.84	2.84	2.84	4.13	4.13	4.13
Wald test p-value	0.00	0.00	0.00	0.00	0.99	0.04	0.00	0.11	0.97
Wooldridge test p-value	0.05	0.12	0.40	0.01	0.38	0.53	0.09	0.57	0.28
Problem(s)	H & SC	H	H	H & SC	Nil	H	H & SC	nil	nil

TABLE 6. Estimated results of ASEAN student enrolments based on income classification (2003-2010)

Variable	Low-Income			Lower Middle-Income			High-Income		
	Total	PbHEIs	PrHEIs	Total	PbHEIs	PrHEIs	Total	PbHEIs	PrHEIs
$pcGNI_{AM}$	2.33***	1.48***	2.62***	1.26	1.45**	.77**	.51	.83***	.20*
	.32	.35	.40	1.00	.62	.32	.09	.07	.10
CPI_{AM}	7.66**	4.16***	8.85***	6.60	5.71	1.94	-1.50	-1.43	-.63
	2.23	.96	1.19	5.78	3.77	1.36	.78	1.22	1.50
$DIST_{AM}$	-.93	-.73	-1.12**	-2.29***	-2.67***	-2.46**	-.54**	-.62***	-.44***
	.97	.43	.52	.36	.19	1.01	.01	.04	.05
Const.	-24.64***	-14.11***	-28.28***	2.47	.86	11.16	-.19	-6.52***	4.47**
	3.05	4.90	5.48	18.38	11.62	9.79	1.73	1.34	1.69
Prob > F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: Values in parentheses represent standard errors.

*, **, *** represent significance levels of 10%, 5%, and 1%.

No estimated value for the upper-middle-income group, as the data was insufficient to be processed.

For low-income countries, distance is less significant for enrolment in Malaysia tertiary institutions except for the private tertiary institutions. For example, in a Vietnam case, even though the distance of Hanoi is about 2,044.92 kilometres from Kuala Lumpur, there is still inflow of students to Malaysia. The condition is also related to the limitation place of higher institutions in catering their students. In 2010, Vietnam could only provide to 60% of the demand for higher education in the country (Clark, 2010). Thus, the remaining numbers further their education abroad, including Malaysia. In other words, lack of access for higher education, pushed the home countries to import higher education (Agarwal & Winkler 1985; Bennell & Pearce 2003; Gesing & Glass 2019). Simultaneously, per capita, income and living cost is significant for all three intra-group analyses and positively relate to enrolments. These results contradict with the earlier hypotheses. It is expected that a wealthier country will 'buy' Malaysian higher education as it is 'cheaper'. At the same time, high living cost in the host country (Malaysia) will distract enrolment from low-income countries. In fact, the sum of per capita income for these countries (Cambodia, Lao P.D.R, Myanmar, and Vietnam) was still lower than Malaysian per capita. However, this not happened, as improving socio-economics quality was a crucial intention for those countries in that period. At the same time, the returns from continuing education are far higher than these two obstacles. This could be one of the possible reasons for the decrease in the number of countries in this group to three in 2009, and two in 2010.

Two variables are reportedly significant for lower middle-income classification. Distance is the most significant variable for the three intra analysis. Meanwhile, per capita, GNI is significant at 5% statistical level on enrolments in both public and private institutions. Indonesia and Thailand, which share the same land border with Malaysia, were the dominant countries for this group. Short distance, for example, results in smooth and inexpensive transportation between these countries and Malaysia. Besides, the border factor may explain the similarity in language, culture, and religion (Perkins & Neumayer 2014; Abbott & Silles 2016). For example, the Malay language, which was the lingua franca in the 15th century (Fernandez 2016), is still being spoken in countries other than Malaysia, including Brunei Darussalam, Singapore, Indonesia, and several parts of southern Thailand. This is evidenced by the four-digit enrolment of Indonesian students for the period of 2003-2010, while Thailand ranked second with four-digit enrolment in the last four years (2007-2010). At the same time, feeling as if they are at home may cause the students to care less about the higher cost of living in Malaysia as compared to their home countries. This is expressed by the insignificant values of a cost price index (CPI) variable for this income group. In another view, Malaysia was an upper middle-income country for the period of

2003-2010. Thus, there was a small difference in terms of per capita income between this group and Malaysia. This may ease the burden in terms of students financing.

For the high-income group, which consists of Singapore and Brunei Darussalam, the cost is not a big issue as this variable is not significant at three different enrolments (Total, PbHEIs and PrHEIs). However, distance is still essential as translated by its 1% and 5% significance levels. As for per capita income, it is more significant to enrolments in public institutions as compared to private institutes. The enrolments of Singaporean students, for example, merely doubled from 462 in 2003 to 898 in 2010. This explains that an increase in per capita income may give more purchasing power and alternatives for the importer in consuming higher education commodity. Though Singapore has more world ranked universities, not all the courses are suitable for their students. For instance, Malaysia is one of the four major global centres in the areas of Islamic banking and finance programmes (PwC 2010). Thus, people from all over the world may choose Malaysia to pursue such fields. Also, the economic status may reflect on social status. As Malaysia positioned below Singapore and Brunei in the analysed period, minimal difference in lifestyle was expected. Therefore, fewer adjustments were needed by the students from these countries, which could also reduce culture shock (Mahmud et al. 2010; Liu 2016; Young & Moncaleano 2019) during their student's live about three to four years for their first degree and two to three years for the postgraduate studies.

CONCLUSION

The results are mixed for different income classifications. In other words, diverse group reacts differently to the Malaysian higher education supply. Thus, the policy makers have to analyse Malaysia's potential market on a segmented basis using different approaches. More pro-active efforts in attracting the interest of prospective tertiary students in these ASEAN countries should be made continuously. This is essential in ensuring the on-going process of higher education internationalisation in Malaysia. ASEAN is the 'must capture' region in the higher education industry as Malaysia is one of the founding members and participates actively in the association. As a result, welcoming more ASEAN students is vital. A vast population, economic wealth, a reliable service sector, and significant intra-trade as a contributory factor for the destination of choice among ASEAN students in pursuing their studies in Malaysia. More importantly, there has been an increase in a new type of tertiary students known as glocal students, who have global aspirations and further their studies locally (either within their own country or in the same region) (Choudaha 2012). Choudaha also projects that 100 million people with annual incomes greater than \$5,000 (preferably known

as the middle class) will inhabit ASEAN countries in 2020. In other words, more of the ASEAN population will be looking for higher and better education but at a lower cost. Also, the youth group (ages 15–29) is expected to increase due to improvements in healthcare and education, and a reduction in mortality. In 2014, for example, the youth group (the most suitable age range for tertiary education) represented approximately one-quarter of the total population (ASEAN 2016). This creates enormous potential importers for Malaysian higher education in the future being. It is also predicted that Asia will be the next superpower for higher education, entertaining more inner-region students as compared to others (ICEF 2015), and Malaysia must be one of the leading exporters for this tertiary education industry.

Since higher education takes place in the exporter/host country, it becomes a Malaysian export commodity and attracts an inflow of foreign exchange. As emphasised in “Bilangan pelajar antarabangsa (number of international students)”, (2013), \$1 billion was generated from only the tuition fees paid by international students in 2012. At the micro level, each student spends \$9,500 annually during his or her studies in Malaysia (Zainor 2011). It justifies why education has become a National Key Economic Area (NKEA) under the ETP. As a new growth engine, it is projected that RM60.7 billion of the country’s GNI will be generated in 2020 compared with RM27.1 billion in 2009. Under the NKEA, 13 entry point projects (EPP) have been listed, and higher education is linked to seven of them. The 12th EPP is entitled “Championing Malaysia’s International Education Brand.” It is estimated that the number of international students will increase to 6 million by 2020 and that 70% will be from the Asia-Pacific region. Malaysia has to seize the opportunity to enrol 200,000 international students as they will generate an extra RM2.8 billion in 2020 as projected in Malaysia’s economic transformation programme (Malaysia 2010).

As this study adopts a macro perspective, not all variables can be detailed individually. For example, instead of using individual tuition fee, the consumer price index (CPI) has been chosen as a proxy. In terms of the model, even though the studies in this field have become more dynamic, the basic idea of ‘bread and butter,’ as represented by income and cost is still relevant. These quantitative factors have to be considered in the same way as other qualitative factors, such as institutional reputation, teaching quality, and university ranking. It is hoped that this study, which focuses on the characters of the importing and exporting countries, contributes new information on international macro demand for Malaysian tertiary education. At the same time, this present macro-study may complement the existing micro-studies. For future studies, the applied model can be expanded and integrated. New regions/countries can be chosen as samples, where comparative analysis could describe the unique characteristics of each importer country. Besides, this study can be integrated with the human capital

theory of migration, which explains the international movement of educated workforces. Lastly, given that the people’s motives are dynamic and macro factors change constantly, research of this topic should be ongoing to assist Malaysia to achieve its ambition of attracting more foreign student enrolments.

NOTES

- ¹ <http://www.mohe.gov.my/muat-turun/awam/statistik/2002-2007/98-data-pengajian-tinggi-malaysia-tahun-2002-2007/file>
- ² <https://data.worldbank.org/indicator/NY.GNP.PCAP.CD>
- ³ <https://data.worldbank.org/indicator/FP.CPI.TOTL>
- ⁴ <https://www.distancecalculator.net/>
- ⁵ <http://databank.worldbank.org/data/download/site-content/OGHIST.xls>

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