INTERNATIONAL DEMAND FOR HIGHER EDUCATION: THE INDUSTRY, THE THEORY AND THE MODEL

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Abstract

International demand for higher education is experiencing a remarkable growth. It is expected that a total of 8.3 million tertiary students will be scattered all around the world by 2020. This is due to an annual growth of 8%, assisted by the upsurge in supply and demand. High return from this industry attracts participation from more countries and further challenges the traditional providers. Hence, this article is a literature review on international demand for higher education which links between the industry, the theory and the model. In details, this paper provides a basic idea and current progress of the industry. In addition, the human capital theory associated with the industry is included. For the purpose of empirical analysis, appropriate model is proposed to enable more future studies.

Keywords: higher education, trans-border, rate of return theory, gravity model

1.0 INTRODUCTION

International demand for higher education is experiencing a phenomenal growth. Statistically supported by United Nations Educational, Scientific and Cultural Organization (UNESCO), for every 100 tertiary enrolments, two are studying abroad (UNESCO, 2014). Quest for knowledge is no longer limited to border and territory constraints. Moreover, pursuing higher education has become one of the five obligations in the enhancement of human capital (Schultz, 1961). Successful human capital development contributes to the accumulation of wealth and acts as the growth catalyst for a country (Blanchard & Olney, 2017). At the same time, this process has become an industry that provides lucrative returns to interested parties around the world (Havergal, 2017).

This can be seen from the economic returns obtained by several higher education exporting countries. In Australia, higher education becomes the fourth largest export commodity with a total of $14 billion, $2.45

billion more than the tourism sector (Australian Government, 2015). The same industry contributes a total of $11 billion for just one academic year in the United Kingdom (Ursula, Iain, & James, 2014). The same kind of return was also recorded in Malaysia. $1 billion was generated just from international tuition fees in a single academic year, as highlighted in "Bilangan pelajar antarabangsa (number of international students)", (2013). At the same time, each international student spends $9,500 annually in Malaysia (Zainor, 2011).

Looking at these great prospects, higher education is now an industry that needs to be prioritised by every country. To facilitate that, more industry-related issues need to be explored, especially on the causes of trans-border tertiary student movement. Therefore, this paper is written to provide basic idea and recent development regarding this industry. Additionally, an appropriate theory is included in parallel to the concept of human capital. A suitable model is also presented as the basis for empirical analysis for more in-depth studies. Figure 1.0 shows the interrelationships between the industry, the theory and the model concerned in determining causes for international demand in higher education.
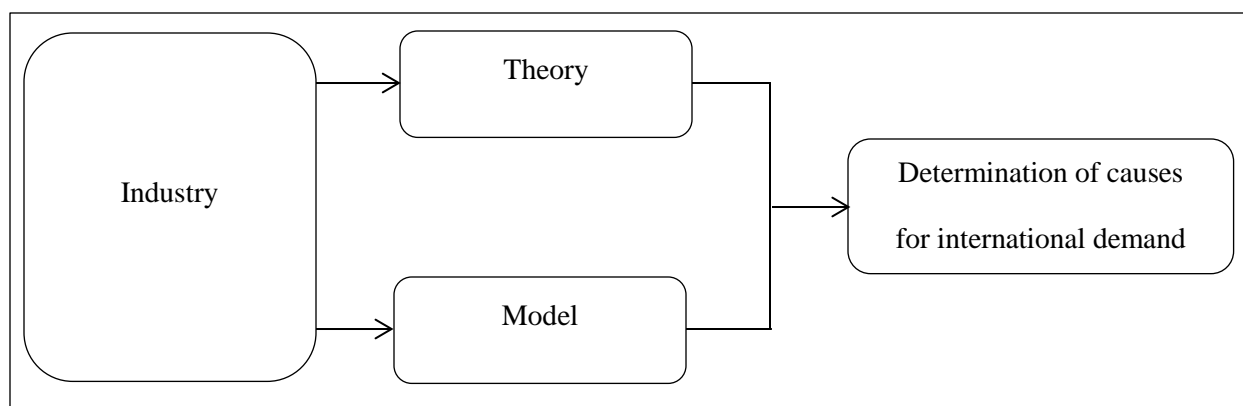
Figure 1 Interrelationships between the industry, the theory and the model in determining the causes for international demand in higher education

2.0 THE INDUSTRY, THE THEORY AND THE MODEL

2.1 The Industry (Higher Education)

World Bank and Organization for Economic Cooperation and Development (OECD) use a similar definition for cross-border tertiary education, where "it refers to the movement of people, programmes, providers, curricula, projects, research and services in tertiary (or higher) education across national jurisdictional borders" (Vincent-Lancrin, 2007). In this movement, supplier (exporting country) and demander (importing country) are two main parties involved. Similar to tourism, the process takes place in the exporting country (Asari, Idris, & Daud, 2011). Its high return attracts many countries to this type of export. One of which is through the growth of international students that are directly proportional to the Gross Domestic Product (GDP) (Hajela & Sumption, 2017).

UNESCO Institute for Statistics or UIS defines internationally mobile students as "those who study in a foreign country of which they are not a permanent resident" (UNESCO, 2009). The same report stresses out that this definition however subjects to three conditions; citizenship, permanent residency and prior education. If any of mobile students does not become a citizen or a permanent resident of that specific country, plus obtaining secondary education in other than specific country, he/she deserves to be identified as an international student of that country. Conversely, definition of foreign students is only determined by citizenship of that particular student.

General Agreement on Trade in Services (GATS) that came into effect in 1995 is a catalyser for this industry. Higher education was one of the subsectors listed out and can be liberalised in four ways, as proposed by World Trade Organization (WTO):

i) demander travel to supplier country (e.g. tertiary student studying abroad),
ii) supplier institution supplies service without existence in demander country (e.g. distance learning),
iii) presence of supplier institution in demander country (e.g. university offshore campus), and
iv) presence of person from supplier institution in demander country (e.g. visiting professor).

All these are presented in Zeynep (2002). Simultaneously, increasing in both demand and supply, with the assistance from information and communication technology (ICT) enhances the industry.

An annual growth of 8% on higher education demand allows the number of international students to grow up to 8.3 million by 2020 (Hearps, 2016). This value surpassed the expectation made by Bohm, Davis, Meares, & Pearce (2002) of 5.5 million for the same year. As reported by International Consultants for Education and Fairs (ICEF), 53% of these demands come from Asia, especially China, India and South Korea (ICEF, 2015). Highlighted in Osawa (2016), there has been a threefold increase in higher education in Asia Pacific since 2000, leading to a total of 1.7 million people to study abroad. Consequently, a special meeting was conducted by UNESCO in setting-up common indicators for the internationalisation of higher education in this respective region (Sharma, 2016).

Exporting countries differ in terms of inbound-outbound ratio. Australia for example, receives more students, while China sends more students overseas. Concurrently, Malaysia has a balanced number (UNESCO, 2013). In comparison, international students studying in OECD countries are three times as much as locals who study abroad (OECD, 2014). This is due to a rise in students from middle-class economies of 161%, as compared to OECD countries by only 29% for over 12 years (Ortiz, Chang, & Fang, 2015). For Matthew (2016), the same group will monopolise this higher education in maintaining the status quo for the next generation.

On the supply side, an expansion took place following the growth by countries other than main English speaking destination countries (MESDC) including China, Malaysia and Singapore (Hearps, 2016). China, as an example, targets a total of 500,000 international students at the end of this decade, as a part of the Belt and Road Initiative (Gao & de Wit, 2017). For MESDC member, there is a fierce competition amongst them. Australia and Canada recorded increases in international student acceptances, more than the UK and the US (ICEF, 2016). The US' strict visa policy against some countries also undermines the demand for higher education in the US (Kopf, 2017) while the burdensome cost remains in the UK (Else, 2017).

Regional students are also the focus of exporting countries. Erasmus Mundus which began in 1987 is the best landmark of enabling tertiary student exchange in continental Europe (Huják & Sik-Lányi, 2017). In North America, the US agrees to receive 100,000 students from Mexico and in return Mexico receives half of the value as a reciprocal, under the Mexico's Proyecta 100,000 program (Tobenkin, 2016). For Southeast Asia, ASEAN International Mobility for Students (ASIMS) is a collaboration initiated by Malaysia, Indonesia and Thailand which started in 2010. The program was further developed in 2013 with the presence of Vietnam, Philippines, Brunei and Japan (Abdullah & Aziz, 2015).

2.2 The Theory (Rate of Return)

As highlighted in Choi (1998), the rate of return theory is most widely used by economists in determining demand for education. One instance is shown in a study by Campbell & Siegel (1967), where people will bear the cost of education if the present value of benefits is more than the present cost. The maximum benefit then will be obtained, when marginal benefit equals to marginal cost. The same opinion is shared by Schultz (1961), Becker (1964), Elaug (1965), Agarwal (1983), Agarwal & Winkler (1985a), Agarwal & Winkler (1985b), Berliri et al. (1999), Bouwel & Veugelers (2013), Yang & Wang (2016) and Ouedraogo, Brorsen, & Dicks (2017).

In other words, education is now a kind of investment, and it has been recognised by many economists including Adam Smith as emphasised in Pejovich (1966). Human in the economy should be regarded as a property and not just a kind of production inputs. Five requirements in improving human capabilities have been listed by Schultz (1961), and formal education (including tertiary level) is one of them. In another study, investment is not only performed by capitalists; labourers invest in themselves, especially in the fields of knowledge and skills. This process allows them to become new capitalists in the market as proposed by Johnson (1960).

Though knowledge is infinite, the supply of education is constrained by resources and structures. In 1960s and 1970s, most developing countries have depended on other countries. The reason was due to incapability in producing their own graduates (Mcmahon 1992). In another view, the prospective leaders of the developing countries were educated abroad, especially in their colonialist countries. These graduates then, inherited the same way of administration and uphold the interest of their colonialist (Goodwin, 1993). In a recent study, human capital ranks high in term of income accumulation and growth determination (Blanchard & Olney, 2017).

In detail, the benefits can be categorised into monetary and non-monetary benefits. Monetary benefits are strongly linked to individual earning, in which the better the educational level, the more earning will be obtained. In some cases, income derived by a degree holder is 75% higher than a high school leaver (Hill, Hoffman, & Rex, 2005). More importantly, return earned from continuing education may yield as much as 15.2% per year, higher as compared to other assets such as land, bonds and stocks (Greenstone & Looney, 2011). In addition, increase in each year of study will increase future earning by 10% (UNESCO, 2011).

From an interesting perspective, furthering the study can delay the process of making debt, until we have a better and higher income to pay for it (McGuire, 2011). The income however, may differ according to several factors, such as type of programme (Jacobs, 2014) and institutional reputation (Schneider, 2013). In Malaysia, the three highest wages for fresh graduates are monopolised by pharmaceutical, business and finance holders as emphasised in JobStreet.com (2014). In addition, the initial salary in the private sector for graduates from three major Malaysian universities is slightly higher than other universities as shared in Lok (2016).

On the other hand, the non-monetary benefits affect both graduates and societies at the same time. It can be categorised into three criterions, and one of them is betterment in life for both individual and his/her society due to a change in mindset and action (Vila, 2000). For example, educated people are more concerned with health awareness. Instead of relying only on traditional medicine, modern medicine has become an alternative (Yew, MalKong, Lam, Sarmila, & Selvadurai, 2015). Preventive measures taken such as breast self-examination at secondary school level can reduce the high cost of treatment (Sapkota, Parajuli, & Kafle, 2016).

Another example is a crime rate. Greater awareness of crime control may reduce the cost borne by the government as a result of managing the crimes later (Baum & Payea, 2005). The level of education is also directly proportional to community involvement such as volunteering and sharing (OECD, 2013). The benefits of the education also have a great impact on the macro level. Investment in female education generates an additional 0.2% GDP per year, as well as reducing the per capita gap between sexes by 20% (Matsui, 2013). As emphasised by U.S. Agency for International Development (USAID), an additional 0.5% of GDP can also be generated through an increase in another one-year of studying (USAID, 2017).

In general, higher education-related costs can be divided into two, namely direct costs and indirect costs (Corazzini, Dugan, & Grabowski, 1972). In particular, the direct costs can be divided into fees (tuition fees, enrolment fees, curriculum fees, library fees) and other costs (cost of living, expenses for books and stationery, transportation charges) as detailed out in Jackson & Weathersby (1975). Currently, lack of government funds forced the public universities to raise their fees (Özoğlu, Gür, & Gümüs, 2016). High cost in tertiary education put student in a dilemma, whether to work or to continue study as mentioned in Greenstone & Looney (2012).

Cost pressures also reduce learning opportunities especially for those with low incomes (Hershbein, 2016). More worrying, high tuition fees bind low-income parents with longer repayment schedules and high interest rates (Browne & Shen, 2017). In easing the costs burden, financial aids such as scholarships, loans and rebates should be offered to the eligible candidates as suggested in Li & Bray (2007) and Lee (2017). Johnstone (2004) projected it in a bigger view, as these types of costs can either be shared or transferred between four parties; the government, parents, students and individual or institutional donors.

Indirect costs involved are the opportunity cost. As an example, the forgone earnings when someone pursuing higher education. During economy crisis for instance, people tend to further study compared to working and this decreases the opportunity cost (OECD, 2012). In Jiménez & Salas-Velasco (2000), families with higher incomes are more easily able to cope with the opportunity cost. Other than that, opportunity cost is associated with household responsibilities. A woman with a baby, may be less attracted to enrol in an academic programme as compared to a woman with a schooling child (Stratton, O'Toole, & Wetzel, 2004).

Gender discrimination issue is the emphasis in a study by Eron & Emong (2017), where women will experience higher opportunity costs than that experienced by men due to their needs to get married at an early age, traditionally. For Walstrum (2014), men are more sensitive to labour demand than women, and are more willing to leave their studies at any time to work. Walstrum continued that, the opportunity cost also varies for each type of job and field, depending on gender. Vedder (2015) however came with different opinion, which involves a macro view. A sudden rise in college enrolment will cause a sharp fall in economic growth, due to the lack of labour in the marketplace.

2.3 The Model (Gravity Model)

The gravity model was rooted out from Newton's Law of universal gravitation, before it is used widely in the field of international trade (Filatov & Novikova, 2015). Tinbergen (1962), a Nobel laureate, first introduced the use of the gravity model in explaining the trade flows (F_{ij}) between the two countries. The simplest model proposed, would involve only three explanatory variables, namely the size of the economy of the exporting country (m_i), the importing country's economic size (m_j) the physical distance between the two countries (d_{ij}) and the constant value (C). The model can be portrayed as:

$$F_{ij} = C \frac{m_i^{\alpha} \ m_j^{\beta}}{d_{ij}^{\gamma}}$$

For regression purpose, this equation is converted into a log-linear form as follows:

$$\log F_{ij} = C + \alpha \log m_i + \beta \log m_j + \gamma \log d_{ij} + \varepsilon$$

In the same research, the effect of neighboring countries and economic unions were captured using three dummy variables, which were added in the second model. In the next model, Gini coefficient was added as a quantitative variable in explaining the diversity of export for each country involved.

This theory was later incorporated with more related variables such as tariff, transportation cost, population, common language, real per capita income and exchange rate as applied in Pöyhönen (1963), Aitken (1973), Geraci & Prewo (1977), Pelzman (1977) and Abrams (1980). Around 20 years later, Deardorff (1984) lauded that the gravity model is an "extremely successful empirical" model in analysing trade flows between countries or blocs. The same opinion is shared by Bergstrand (1985). Possibly, R-squared in the range of 65% to 95% which is high in value, is the most suitable factor in explaining its success, as highlighted in Sohn (2005).

Kimura and Lee (2006) agreed with the Sohn's study, revealing the suitability of the gravity model for services trade as compared with goods trade. Contemporarily, gravity model is used in wide scope of services including Santeramo & Morelli (2016) for cross border agro-tourism, Czaika & Parsons (2017) on high-skilled immigration, flows on foreign direct investment in Kahouli & Maktouf (2015), flows of air passenger in China (Zhang & Zhang, 2016) and domestic tourism in Spain by Voltes-Dorta, Jiménez, &

Suárez-Alemán (2016). Even gravity model is introduced in medical for identifying growth for nine types of cancer (Cheng et al., 2015).

In demand for higher education, Kelley (1921) was possibly the initial study that applied gravity concept, as emphasised in Schofer (1975). Shorter distance gravitated enrollment in most American colleges. Stewart (1941) proved it empirically, when enrollments at Harvard, Princeton, Vassar and Yale were inversely proportional to distance. The use of whole gravity model was then continued by McConnell (1965). The study successfully illustrated 84% of the variation of enrollment in Bowling Green State University, Ohio. Later, Kariel (1968) managed to record 98% of the enrollment variation in Western Washington State College.

However, the study by McConnell and Kariel was limited to samples of student from the same county in which the college is located. A report by Gossman, Charles, Patricelli, Schmid, & Thomas (1967) outlined about outmigration of Washington students to other states in the United States. The results varied, as migration variation for public university students' was recorded at 85%. On the other hand, 95% was a value for variation of migration for private university students'. In another report, Fairweather (1980) highlighted that the gravity model is an accepted approach in studying tertiary enrollments, in the United States and England.

Over time, the gravity model on higher education has been augmented with more relevant variables. For example, S'a, Florax, & Rietveld (2004) which estimated regional demand for Netherland tertiary education. While distance and rental cost reduced learning interest, urbanisation process in Netherland attracted more students. In measuring socio-economic conditions, population density and quality of life in each province were used in Agasisti & Dal Bianco (2007). As a result, these factors positively affected the demand for higher education in Italy. More important, both studies explain the need to see higher education as consumption, besides investment.

Another research in Italy used the gravity model in suggesting suitable sites for the construction of a new university (Bruno & Improta, 2008). This was done based on the expected distribution of the enrollments in two competitive nearby sites. To facilitate the process, samples were zoned into 59 areas, including those from outside the territorial. Grigor & Viktoriya (2009) analysed the interest of 129 countries towards higher education in Sweden. Similarities in terms of language, boundary and colonial history have a great impact on marketability of local education. Hence, such countries should be given more attention in the future.

The same model was also applicable in the study by González et al. (2011), which analysed flows of tertiary student between participating countries under the Erasmus Mundus program. As a comparison, Mediterranean countries receive more students than oceanic/continental countries. Attraction in the tourism sector was the biggest contributor to this distinction. In increasing foreign admission to European universities, quality is a main concern under the Bologna Process. This was evidenced by high significance values for the quality variable in five different categories of host country in Europe, as stated in Bouwel & Veugelers (2013).

Jena & Reilly (2013) presented a different idea about the demand for high education in the United Kingdom. The visa application has been the basis of the model. Findings revealed that the bilateral exchange rate had a greater impact than the per capita income of a visa applicant's country. Using gravity model, Zheng (2014) differentiated the importing countries for U.K. higher education into developed and developing economies.

In his conclusion, population and wealth were reasons for enrollment from developed countries. On the other hand, socio-political and economic factors moved students from developing countries to the United Kingdom.

Abbott & Silles (2016) used as many as 18 host countries and 38 home countries in their paper. Both types of country were also divided into high-income countries and non-high income countries. What distinguished it from others was the use of time zone difference to replace physical distance. There were also attempts in linking higher education with professional migration such as Ramos & Royuela (2017). It was concluded that those with higher education level and better result are more willing to migrate to foreign countries. Mobility experience during the learning period also boosted this migration process, as compared to other factors.

3.0 CONCLUSION

Developed and developing nations are not impervious to most of the problems that could limit the capacity of expansion in education for growth and development stimulation. Some of these problems are such as underemployment, low absorptive capacity, scarcity of professionals, regional imbalances, and brain drain. The persistence of various problems in spite of the multitude of policies being formulated necessitates a more focused, responsive, functional, and qualitative educational system. In order to contribute significantly to healthy economic growth and development, the higher education system must be of an acceptably high quality which meets the skill-demand needs of the industries.

In conclusion, higher education is a high-prospective commodity that has a great potential to boost up the economic growth of a country. Not forgetting the positive spillover due to human capital development and knowledgeable society. There is a hope that this paper will be a stepping-stone for more researches, especially in macro field in identifying the reasons of trans-border tertiary student movement. Not limited to academic qualifications from prestigious universities, macro factors related to both countries (home and host), are essential elements to be taken into account.

References

Abbott, A., & Silles, M. (2016). Determinants of international student migration. *The World Economy, 39*(5), 621–635. http://doi.org/10.1111/twec.12319

Abdullah, D., & Aziz, M. I. A. (2015). Locating Malaysia's place within the ASEAN higher education landscape: Current status, challenges and future prospects. In R. Bhandari & A. Lefébure (Eds.), *Asia: The next higher education superpower?* New York: Institute of International Education.

Abrams, R. K. (1980). International trade flows under flexible exchange rates. *Economic Review, 65*(3), 3–10. Retrieved from https://www.kansascityfed.org/PUBLICAT/ ECONREV/EconRev Archive/1980/1q80abra.pdf

Agarwal, V. B. (1983). Foreign students' demand for United States higher education. *Eastern Economic Journal, 9*(4), 309–323. Retrieved from http://www.jstor.org/ stable/40325124

Agarwal, V. B., & Winkler, D. R. (1985a). Foreign demand for United States higher education (eastern hemisphere). *Economic Development and Cultural Change, 33*(3), 623–644. http://doi.org/10.1086/451482

Agarwal, V. B., & Winkler, D. R. (1985b). Migration of foreign students to the United States. *The Journal of Higher Education, 56*(5), 509–522. Retrieved from http://www.jstor.org/stable/ 1981208

Agasisti, T., & Dal Bianco, A. (2007). Determinants of college student migration in Italy: Empirical evidence from a gravity approach. Retrieved from https://papers.ssrn.com/sol3/papers.cfm? abstract_id=1063481

Aitken, N. D. (1973). The effect of the EEC and EFTA on European Trade: A temporal cross-section analysis. *The American Economic Review, 63*(5), 881–892. http://doi.org/10.2307/1813911

Asari, F. F. A. H., Idris, A. R., & Daud, N. M. (2011). Modelling education tourism using Gravity Model in Malaysian public higher education institutions. *Australian Journal of Basic and Applied Sciences, 5*(5), 1257–1274. Retrieved from http://www.ajbasweb.com/old/ajbas/ 2011/1257-1274.pdf

Australian Government, D. of F. A. and T. (2015). Australia's top 10 goods & services exports and imports. Retrieved from http://dfat.gov.au/trade/resources/trade-at-a-glance/pages/top-goods-services.aspx

Baum, S., & Payea, K. (2005). *Education pays 2004: The benefits of higher education for individuals and society*. Chicago: College Board. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/ download;jsessionid=616BFF8DF222964CE62B2538DEC2FBD0?doi=10.1.1.382.7266&rep=rep1 &type=pdf

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis*. Chicago: University of Chicago Press.

Bergstrand, J. H. (1985). The gravity equation in international trade: Some microeconomic foundations and empirical evidence. *The Review of Economics and Statistics, 67*(3), 474–481. Retrieved from http://www.jstor.org/stable/1925976

Berliri, C., Bourguignon, F., Healy, T., Ryan, P., Sastre-Descals, J., Sutherland, H., … O 'donoghue, C. (1999). Estimating the rate of return to education using microsimulation. *The Economic and Social Review, 30*(3), 249–265. Retrieved from http://www.esr.ie/vol30_3/3_O%27 Donoghue.pdf

Bilangan pelajar antarabangsa meningkat (Number of international students increased). (2013, July 2). *Sinar Harian.* Retrieved from http://www.sinarharian.com.my/nasional/bilangan?pelajar? antarabangsa?meningkat?1.178222

Blanchard, E., & Olney, W. W. (2017). Globalization and human capital investment: Export composition drives educational attainment. *Journal of International Economics, 106*, 165–183. Retrieved from 10.1016/j.jinteco.2017.03.004

Bohm, A., Davis, T., Meares, D., & Pearce, D. (2002). *Global student mobility 2025: Forecasts of the global demand for international higher education.* IDP Education Australia. Retrieved from

http://www.foresightfordevelopment.org/sobipro/55/333-global-student-mobility-2025-fore   casts-of-the-global-demand-for-international-higher-education

Bouwel, L., & Veugelers, R. (2013). The determinants of student mobility in Europe: The quality dimension. *European Journal of Higher Education, 3*(2), 172–190. http://doi.org/10.1080/ 21568235.2013.772345

Browne, R. A., & Shen, H. (2017). Challenges and solutions of higher education in the Eastern Caribbean States. International *Journal of Higher Education, 6*(1), 169–179. http://doi.org/10. 5430/ijhe.v6n1p169

Bruno, G., & Improta, G. (2008). Using gravity models for the evaluation of new university site locations: A case study. *Computers & Operations Research, 35*(2), 436–444. http://doi.org/10. 1016/j.cor.2006.03.008

Campbell, R., & Siegel, B. N. (1967). The demand for higher education in the United States, 1919-1964. *The American Economic Review, 57*(3), 482–494. Retrieved from http://www.jstor.org/ stable/1812115

Cheng, F., Liu, C., Lin, C.-C., Zhao, J., Jia, P., Li, W.-H., & Zhao, Z. (2015). A gene gravity model for the evolution of cancer genomes: A study of 3,000 cancer genomes across 9 cancer types. *PLoS Comput Biol, 11*(1), 25. http://doi.org/10.1371/journal.pcbi.1004497

Choi, S. T. (1998). *A study of factors affecting student demand for higher education in Korea from 1974 to 1997* (Unpublished doctoral dissertation). University of Iowa. Retrieved from http://search.proquest.com.ezaccess.library.uitm.edu.my/pqdtglobal/docview/304427657/B774A49 70B6A4019PQ/1?accountid=42518

Corazzini, A. J., Dugan, D. J., & Grabowski, H. G. (1972). Determinants and distributional aspects of enrollment in U.S. higher education. *The Journal of Human Resources, 7*(1), 39–59. Retrieved from http://www.jstor.org/stable/145056

Czaika, M., & Parsons, C. R. (2017). The gravity of high-skilled migration policies. *Demography, 54*(2), 603–630. http://doi.org/10.1007/s13524-017-0559-1

Deardorff, A. V. (1984). Testing trade theories and predicting trade flows. *Handbook of International Economics, 1*, 467–517. http://doi.org/doi:10.1016/S1573-4404(84) 01013-3

Elaug, M. (1965). The rate of return on investment in education in Great Britain. *The Manchester School, 33*(3), 205–251. http://doi.org/10.1111/j.1467-9957.1965. tb00056.x

Else, H. (2017). Overseas student enrolments at UK universities fall again. Retrieved from https://www.timeshighereducation.com/news/overseas-student-enrolments-uk-universities-fall-again

Eron, L., & Emong, P. (2017). Tackling education of girl child with disability in urban settings of Uganda. In W. Pink & G. Noblit (Eds.), *Second international handbook of urban education* (pp. 51–65). Springer. Retrieved from http://link.springer.com/chapter/10.1007/978-3-319-40317-5_5

Fairweather, M. (1980). *University enrollment patterns in England and the United States.* Washington, D.C.: ERIC. Retrieved from http://files.eric.ed.gov/fulltext/ED194040.pdf

Filatov, A., & Novikova, A. (2015). The gravity model of interregional trade: Case of Eastern Siberia. *Czech Journal of Social Sciences, Business and Economics, 4*(3), 39–45. Retrieved from http://www.zbw.eu/econis-archiv/bitstream/handle/11159/563/Filatov and Novikova 2015-1.pdf?sequence=1&isAllowed=y

Gao, H., & de Wit, H. (2017). China and international student mobility. *International Higher Education,* (90), 3–5. http://doi.org/10.6017/ihe.2017.90.9992

Geraci, V. J., & Prewo, W. (1977). Bilateral trade flows and transport costs. *The Review of Economics and Statistics, 59*(1), 67–74. http://doi.org/10.2307/1924905

González, C. R., Mesanza, R. B., & Mariel, P. (2011). The determinants of international student mobility flows: An empirical study on the Erasmus programme. *Higher Education, 62*(4), 413–430. http://doi.org/10.1007/s10734-010-9396-5

Goodwin, C. D. (Ed.). (1993). *International investment in human capital: Overseas education for development.* New York: Institute of International Education. Retrieved from https://eric.ed.gov/?id=ED368661

Gossman, C. S., Charles, E. N., Patricelli, T. J., Schmid, C. F., & Thomas, E. S. (1967). *Migration of college and university students: State of Washington.* Seattle: Washington State Census Board. Retrieved from http://files.eric.ed.gov/fulltext/ED017993.pdf

Greenstone, M., & Looney, A. (2011). Where is the best place to invest $102,000? In stocks, bonds, or a college degree? Retrieved from http://www.hamiltonproject.org/ assets/legacy/ files/downloads_and_links/06_college_value.pdf

Greenstone, M., & Looney, A. (2012). Regardless of the cost, college still matters. Retrieved from https://www.brookings.edu/blog/jobs/2012/10/05/regardless-of-the-cost-college-still-matters/

Grigor, H., & Viktoriya, H. (2009). *The determinants of the attractiveness of national higher education systems* (EERC Working Paper No. 09/08). Economics Education and Research Consortium. Retrieved from http://www.aea.am/files/papers/w1104.pdf

Hajela, R., & Sumption, M. (2017). *Non-EU higher education students: Impact on the UK economy.* Oxford: Centre of Migration, Policy & Society. Retrieved from http://www.migration observatory.ox.ac.uk/wp-content/uploads/2016/07/Briefing-Higher_Education-1.pdf

Havergal, C. (2017). Opening universities linked to increased GDP. Retrieved from https://www.timeshighereducation.com/news/opening-universities-linked-to-increased-gross-domestic-product-gdp

Hearps, R. (2016). *Global trends & disruptors in international student referrals.* Melbourne: ICEF. Retrieved from http://www.icef.com/wp-content/uploads/seminarprogramme/2016/anza__

prov_ag__1450__Rod-Hearps__Global-Trends-and-Disruptors-in-International-Student-Mobility---Where-are-International-Students-Going-and-Why.pdf

Hershbein, B. (2016). A college degree is worth less if you are raised poor. Retrieved from https://www.brookings.edu/blog/social-mobility-memos/2016/02/19/a-college-degree-is-worth-less-if-you-are-raised-poor/

Hill, K., Hoffman, D., & Rex, T. (2005). *The value of higher education: Individual and societal benefits.* Arizona: Arizona State University. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjp4eyRpJfVAhVDerwKHVZXCLYQFgglMAA&url=https%3A%2F%2Fwww.asu.edu%2Fpresident%2Fp3%2FReports%2FEdValue.pdf&usg=AFQjCNFlnRjTr4XMLiNB9WDlKqa0s97vcA

Huják, J., & Sik-Lányi, C. (2017). Modern journeyman or contemporary ERASMUS students-serving Europe's knowledge-based economy. *International Journal of Learning and Intellectual Capital, 14*(2), 177–191.

ICEF. (2015). The state of international student mobility in 2015. Retrieved from http://monitor.icef.com/2015/11/the-state-of-international-student-mobility-in-2015/

ICEF. (2016). More countries moving to internationalise higher education. Retrieved from http://monitor.icef.com/2016/05/more-countries-moving-to-internationalise-higher-education/

Jackson, G. A., & Weathersby, G. B. (1975). Individual demand for higher education: A review and analysis of recent empirical studies. *The Journal of Higher Education, 46*(6), 623–652. Retrieved from http://www.jstor.org/stable/1979059

Jacobs, P. (2014). Science and math majors earn the most money after graduation. Retrieved from http://www.businessinsider.com/stem-majors-earn-a-lot-more-money-after-graduation-2014-7

Jena, F., & Reilly, B. (2013). The determinants of United Kingdom student visa demand from developing countries. *Journal of Labor & Development, 2*(1), 1–22. Retrieved from http://www.izajold.com/content/2/1/6

Jiménez, J. de D., & Salas-Velasco, M. (2000). Modeling educational choices. A binomial logit model applied to the demand for higher education. *Higher Education, 40*(3), 293–311. http://doi.org/10.1023/A:1004098300436

JobStreet.com. (2014). Top 10 best paying jobs in Malaysia. Retrieved from http://www.jobstreet.com.my/career-resources/top-10-best-paying-jobs-in-malaysia/#.WHhWrbZ95E4

Johnson, H. G. (1960). The political economy of opulence. *The Canadian Journal of Economics and Political Science, 25*(4), 552–564. Retrieved from http://www.jstor.org/ stable/138933

Johnstone, D. B. (2004). The economics and politics of cost sharing in higher education: comparative perspectives. *Economics of Education Review, 23*, 403–410. http://doi.org/ 10.1016/j.econedurev.2003.09.004

Kahouli, B., & Maktouf, S. (2015). The determinants of FDI and the impact of the economic crisis on the implementation of RTAs: A static and dynamic gravity model. *International Business Review, 24*, 518–529. http://doi.org/10.1016/ j.ibusrev.2014.10.009

Kariel, H. G. (1968). Student enrollment and spatial interaction. *The Annals of Regional Science, 2*(1), 114–127. http://doi.org/10.1007/BF02096181

Kelley, R. L. (1921). The preliminary report of the association commission on the distribution of colleges. *Bulletin of the Association of American Colleges, 7*(4), 5–28.

Kimura, F., & Lee, H.-H. (2006). The gravity equation in international trade in services. *Review of World Economics/Weltwirtschaftliches Archiv, 142*(1), 92–121. Retrieved from http://www.jstor.org/stable/40441082

Kopf, D. (2017). Trump is threatening to bar the million international students that US colleges need to subsidize tuitions each year. Retrieved from https://qz.com/849612/china-sends-330000-students-to-the-us-each-year-and-trump-could-change-that/

Lee, K. (2017). Rethinking the accessibility of online higher education: A historical review. *The Internet and Higher Education, 33*, 15–23. http://doi.org/10.1016/ j.iheduc.2017.01.001

Li, M., & Bray, M. (2007). Cross-border flows of students for higher education: Push-pull factors and motivations of mainland Chinese students in Hong Kong and Macau. *Higher Education, 53*(6), 791–818. http://doi.org/10.1007/s10734-005-5423-3

Lok, D. (2016). What's the monthly salary of fresh graduates in Malaysia? Retrieved from https://www.quora.com/Whats-the-monthly-salary-of-fresh-graduates-in-Malaysia

Matsui, K. (2013). The economic benefits of educating women. Retrieved from https://www.bloom berg.com/news/articles/2013-03-07/the-economic-benefits-of-educating-women

Matthew, D. (2016). Expansion in global higher education "has increased inequality." Retrieved from https://www.timeshighereducation.com/news/expansion-in-global-higher-education-has-increas ed-inequality

McConnell, H. (1965). Spatial variability of college enrollment as a function of migration potential. *The Professional Geographer, 17*(6), 29–37. http://doi.org/10.1111/j.0033-0124.1965.029_k.x

McGuire, J. (2011). The benefits of having a college education. Don't let opportunity pass you by. Retrieved from http://www.collegeview.com/articles/article/the-benefits-of-having-a-college-education

Mcmahon, M. E. (1992). Higher education in a world market. An historical look at the global context of international study this research. *Higher Education, 24*(4), 465–482. Retrieved from http://www.jstor.org/stable/3447582

OECD. (2012). What are the returns on higher education for individuals and countries? Retrieved from http://www.oecd-ilibrary.org/education/what-are-the-returns-on-higher-education-for-individuals-and-countries_5k961l69d8tg-en

OECD. (2013). What are the social benefits of education? Retrieved from https://www.oecd.org/education/skills-beyond-school/EDIF 2013--N°10 (eng)--v9 FINAL bis.pdf

OECD. (2014). *Education at a glance 2014: OECD indicators.* OECD Publishing. http://doi.org/10.1787/eag-2013-en

Ortiz, A., Chang, L., & Fang, Y. (2015). International students bring money, skills and jobs. Retrieved from http://www.universityworldnews.com/article.php?story=2015021209 2452773

Osawa, A. (2016). Higher education data collection in Asia and the Pacific. Perspective from the UNESCO Institute for Statistics. In *Internationalization of Higher Education in ASEAN+6.* Bangkok: UNESCO Bangkok. Retrieved from http://www.unescobkk.org/fileadmin/user_upload/apeid/HigherEdu/Indicators-Nov2016/UIS_AIMS-Aki.pdf

Ouedraogo, F. B., Brorsen, B. W., & Dicks, M. R. (2017). Veterinarians and student loan debt: Is the burden too much? In *Southern Agricultural Economics Association Annual Meeting. Alabama: Southern Agricultural Economics Association.* Retrieved from http://ageconsearch.umn.edu/bitstream/252651/2/SAEA PAPER 2017 Veterinarians and Student Loan Debt.pdf

Özoğlu, M., Gür, B. S., & Gümüs, S. (2016). Rapid expansion of higher education in Turkey: The challenges of recently established public universities (2006–2013). *Higher Education Policy, 29*(1), 21–39. http://doi.org/10.1057/hep.2015.7

Pejovich, S. (1966). Human capital: A review article. *Review of Social Economy, 24*(2), 167–175. Retrieved from http://www.jstor.org/stable/29767824

Pelzman, J. (1977). Trade creation and trade diversion in the Council of Mutual Economic Assistance 1954-70. *The American Economic Review, 67*(4), 713–722. Retrieved from http://www.jstor.org/stable/1813402

Pöyhönen, P. (1963). A tentative model for the volume of trade between countries. *Weltwirtschaftliches Archiv, Bd, 90*, 93–100. Retrieved from http://www.jstor.org/ stable/40436776

Ramos, R., & Royuela, V. (2017). Graduate migration in Spain: The impact of the Great Recession on a low-mobility country. In J. Corcoran & A. Faggian (Eds.), *Graduate migration and regional development: An international perspective* (pp. 159–163). Northampton: Edward Elgar.

S'a, C., Florax, R. J. G. M., & Rietveld, P. (2004). Determinants of the regional demand for higher education in the Netherlands: A gravity model approach. *Regional Studies, 38*(4), 375–392. http://doi.org/10.1080/03434002000213905

Santeramo, F. G., & Morelli, M. (2016). Modelling tourism flows through gravity models: A quantile regression approach. *Current Issues in Tourism, 19*(11), 1077–1083. http://doi.org/10.1080/13683500.2015.1051518

Sapkota, D., Parajuli, P., & Kafle, T. (2016). Effectiveness of educational intervention programme on knowledge regarding breast self-examination among higher secondary school girls of Biratnagar. *Birat Journal of Health Sciences, 1*(1), 13–19.

Schneider, M. (2013). *Degrees of value: Differences in the wages of graduates from Minnesota's colleges and universities.* Minnesota: College Measures. Retrieved from http://www.air.org/system/files/downloads/report/College-Measures-Minnesota-September-201 6.pdf

Schofer, J. P. (1975). Determining optimal college locations. *Higher Education, 4*(2), 227–232. Retrieved from http://www.jstor.org/stable/3445814

Schultz, T. W. (1961). Investment in human capital. *The American Economic Review, 51*(1), 1–17. Retrieved from http://www.jstor.org/stable/1818907

Sharma, Y. (2016). The push for Asian HE internationalisation indicators. Retrieved from http://www.universityworldnews.com/article.php?story=20161123124836365

Sohn, C.-H. (2005). *Does the gravity model fit Korea's trade patterns? Implications for Korea's FTA policy and North-South Korean trade* (CETS Working Papers No. 2005–2). Yokohama: Center for International Trade Studies. Retrieved from http://www.econ.ynu.ac.jp/cits/publications/ pdf/CITSWP2005-02.pdf%5Cnhttp://www. kiep.go.kr/include/filedown.jsp?fname=WOPA200 101.pdf&fpath=Pub0201&NO=131573&FNO=414

Stewart, J. Q. (1941). The" Gravitation," or geographical drawing power, of a college. *Bulletin of the American Association of University Professors, 27*(1), 70–75.

Stratton, L. S., O'Toole, D. M., & Wetzel, J. N. (2004). Factors affecting initial enrollment intensity: Part-time versus full-time enrollment. *Economics of Education Review, 23*(2), 167–175. http://doi.org/10.1016/j.econedurev.2003.06.002

Tinbergen, J. (1962). *Shaping the world economy: Suggestions for an international economic policy.* New York: Twentieth Century Fund.

Tobenkin, D. (2016). *Latin American Partnerships CROSS BORDERS. International Educator.* Washington, D.C.: NAFSA Association of International Educators. Retrieved from https://www.nafsa.org/_/File/_/ie_marapr16_latin_america.pdf

UNESCO. (2011). Education is the key to lasting development. Retrieved from http://www.unesco.org/fileadmin/MULTIMEDIA/HQ/ED/GMR/pdf/gmr2010/MDG2010_Facts_a nd_Figures_EN.pdf

UNESCO. (2013). *The international mobility of students in Asia and the Pacific*. Paris: UNESCO and UNESCO Bangkok. Retrieved from http://unesdoc.unesco.org/images/0022/002262/ 226219E .pdf

UNESCO. (2014). Global flow of tertiary-level students. Retrieved from http://www.uis. unesco.org/Education/Pages/international-student-flow-viz.aspx

UNESCO, I. for S. (2009). *Global education digest 2009: Comparing education statistics across the world.* Montreal: UNESCO Institute for Statistics.

Ursula, K., Iain, M., & James, W. (2014). *The impact of universities on the UK economy.* London: Universities UK. Retrieved from http://www.universitiesuk.ac.uk/policy-and-analysis/reports/ Documents/2014/the-impact-of-universities-on-the-uk-economy.pdf

USAID. (2017). Putting education to work education is transformational. Retrieved from https://www.usaid.gov/education

Vedder, R. (2015). The opportunity costs of higher education. Retrieved from http://www.seethruedu. com/the-opportunity-costs-of-higher-education/

Vila, L. E. (2000). The non-monetary benefits of education. *European Journal of Education, 35*(1), 21–32. Retrieved from http://www.jstor.org/stable/1503615

Vincent-Lancrin, S. (Ed.). (2007). *Cross border tertiary education: A way towards capacity development.* Paris: OECD, World Bank and NUFFIC.

Voltes-Dorta, A., Jiménez, J. L., & Suárez-Alemán, A. (2016). The impact of ETA's dissolution on domestic tourism in Spain. *Defence and Peace Economics, 27*(6), 2015–2018. http://doi.org/10.1080/10242694.2015.1025485

Walstrum, T. (2014). The opportunity cost of a college education: How shocks to local labor demand affect enrollment and the gender gap. Retrieved from https://econ.uic.edu/docs/default-source/CV/twalsjmp.pdf?sfvrsn=2

Yang, J., & Wang, Y. (2016). *Tuition fees and student mobility* (Unpublished master dissertation). Lund University. Retrieved from https://lup.lub.lu.se/student-papers/search/publication/ 8619324

Yew, V. W. C., MalKong, S., Lam, K. C., Sarmila, M. S., & Selvadurai, S. (2015). Education and awareness of modern health care amongst aboriginal people: The case of the Jakuns of Peninsular Malaysia. *Malaysian Journal of Society and Space, 11*(13), 79–85. Retrieved from http://www.ukm.my/geografia/images/upload/8x.geografia-dec15-vivien-bi-edam2.pdf

Zainor, S. (2011, January 4). IPT harus tingkatkan kualiti , perhebat promosi di luar negara. *Berita Harian.* Retrieved from http://www2.bharian.com.my/bharian/articles/IPTharustingkatkan kualiti_perhebatpromosidiluarnegara/Article

Zeynep, V. (2002). Trade in higher education and GATS basics. In *Proceedings of the First Global Forum on International Quality Assurance, Accreditation and the Recognition of Qualifications in Higher Education* (pp. 1–15). Paris: UNESCO. Retrieved from http://portal.unesco.org/edu cation/en/files/6705/10346775130gf8_tradehe_gats_basics.doc/gf8_tradehe_gats_basics.doc

Zhang, Y., & Zhang, A. (2016). Determinants of air passenger flows in China and gravity model: Deregulation, LCCs and high-speed rail. *Journal of Transport Economics and Policy, 50*(3), 287–303. Retrieved from http://www.ingentaconnect.com/contentone/lse/jtep/2016/00000050/ 00000003/art00005

Zheng, P. (2014). Antecedents to international student inflows to UK higher education: A comparative analysis. *Journal of Business Research, 67*(2), 136–143. http://doi.org/ 10.1016/ j.jbusres.2012.11.003