

The Impact of Exchange Rate Variations and University Reputation on the Choice of Destinations of International Students

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Abstract

The purpose of this paper is to determine the degree to which changes in exchange rates have an impact of the choices made by student when they travel abroad to undertake higher education. As well as changes in exchange rates other factors are also considered such as changes in the real income of students, and the reputation of universities.

Introduction

In recent years there has been a steady growth in the number of students seeking to study abroad at the higher education level. In 2002 it was estimated by the OECD that there were about two million students studying in tertiary education institutions outside of their own country. This figure is expected to rise to around five million by the year 2020 (OECD 2004). Traditionally the United States and the United Kingdom were the two most important destinations for students wishing to study abroad but in recent years countries like Australia and New Zealand have also become important destinations for students travelling overseas to universities.

When deciding on a study destination students are influenced by a number of factors. These factors include such things as the reputation of universities, the cost of living in possible destination countries, the general impression of life in possible destination countries, the success of the marketing of universities abroad, the ease of entering and exiting the destination country, the possibility perhaps of migrating to the destination country and the cost of tuition fees. The cost of tuition fees and living expenses are influenced by fluctuations in exchange rates, particularly between the country of origin of the student and the country of destination.

Although there is an extensive literature on the impact of changes in exchange rates on commodity trade, the literature on the impact on the trade in educational services is far less extensive (Chaoshin and Ken 200; Chaoshin et.al. 2001). Some studies have found that changes in the cost of education will influence students to either withdraw, or temporarily withhold, their candidature from universities (Christensen 2003 p1). As well some governments have sponsored surveys on the relative cost to international students of studying in their countries (see IDP 2001, 2004 for Australia and Asia 2000 for New Zealand).

As well as exchange rates the reputation of universities, is another factor that has an impact on students choosing their study destination. A university qualification is directly related to the students' career opportunities and hence the recognition of qualifications by employer is important to students. If the educational cost is not significantly different among the universities in a particular destination country, it is expected that students will be interested in studying at the better regarded universities in that country. The reputation of a university includes not only the recognition of its awarded degree but also the availability and standard of educational facilities it offers and its physical location.

The purpose of this study is to quantify the impact that exchange rate fluctuations and the reputation of universities have had on the direction and scope of trade in education services at the higher education level. By using data on the number of students studying in universities in Australia and New Zealand and their country of origin it will be possible to ascertain the degree to which they are influenced by changes in relative exchange rates.

Background

The international trade in higher education services has become an important business over the past ten years. The greatest destination for international students is the United States. For those students not moving within the European Union the next greatest destinations are Australia, Germany and the United Kingdom. A range of other European countries are also important along with countries such as New Zealand, Malaysia, Canada and Turkey. English speaking countries such as the United States, the United Kingdom, Canada, Australia, Ireland and New Zealand are particularly popular and constitute over 50 percent of the market. The origins of the students are less concentrated although Asian countries are particularly important. China, India and Korea are the three most important sources of international students although it is noticeable that the top twenty countries of origin do not dominate the mix anywhere near as much as the top twenty countries do the countries of destination.

As mentioned in the introduction students are influenced by a range of factors, one of the most important being the relative affordability of paying for fees and living expenses in the country in which they wish to study. Changes in exchange rates can be quite dramatic over a number of years and perhaps could influence the choices made by students when selecting the country to which they wish to travel. Looking at the case of a few countries we can see how this may have occurred in practice. Figure 1 provides indexes of the currencies of Indonesia, Korea and Thailand during the 1990s. All three of these countries experienced substantial depreciations of their currencies compared to the Australian dollar during the Asian economic crisis of the late 1990s. Australia is an important destination for students from these three countries and it would be expected that the sharp changes in the exchange rates between these countries and Australia would have affected the choices made by students from these countries.

The purpose of this study is to determine if there is a link between changes in exchange rates and the decisions of students to study at Australian and New Zealand universities. In doing so it is possible to concentrate not just on the influence of exchange rate movements and growth in real GDP in the countries of student origins but also look at such factors as the reputation of universities. Data has been provided by the New Zealand Government's Ministry of Education and the Australian Government's Department of Education, Science and Technology. Additional data on exchange rates, real GDP etc comes from the International Monetary Fund and the Asian Development Bank.

In the case of Australia and New Zealand the presence of international students in those two countries' universities has become increasingly important over the past ten years. Figure 2 gives the number of overseas students in Australian and New Zealand universities as a percentage of total students between 1994 and 2003. As can be seen in both cases there has been a substantial increase in international student numbers as a proportion of total students. Table 1 shows the breakdown of the countries of origin of these students in Australia and New Zealand. As can be seen from the table Australia has a more diverse mix of students with New Zealand's overseas students being dominated more by student from China, but nonetheless in both case Asian students dominate.

Table 1: Overseas Students in Australia and New Zealand

	Australia 2004			New Zealand 2003	
	no	%		no	%
China	37,106	16.2	China	14,867	58.7
Malaysia	28,862	12.6	United States	1,667	6.6
Hong Kong	27,461	12.0	Korea	922	3.6
India	16,320	7.1	Malaysia	856	3.4
Indonesia	11,316	5.0	India	704	2.8
United States	9,522	4.2	Germany	651	2.6
Thailand	5,824	2.5	Japan	611	2.4
Taiwan	4,533	2.0	Hong Kong	427	1.7
Japan	4,409	1.9	Thailand	340	1.3
Korea	4,041	1.8	Indonesia	324	1.3
Vietnam	3,736	1.6	Taiwan	323	1.3
Norway	3,666	1.6	Fiji	298	1.2
Canada	3,287	1.4	Vietnam	280	1.1
Bangladesh	3,156	1.4	Singapore	273	1.1
Sri Lanka	2,722	1.2	United Kingdom	230	0.9
UAE	2,658	1.2	Norway	209	0.8
Germany	2,440	1.1	Canada	189	0.7
United Kingdom	1,830	0.8	Sweden	168	0.7
Pakistan	1,441	0.6	Samoa	114	0.4
SA	1,419	0.6	Sri Lanka	106	0.4
Sweden	1,397	0.6			
Fiji	1,341	0.6			
Other	50,068	21.9	Other	1,783	7.0
Total	228,555	100.0	Total	25,342	100.0

Source: Australia, Department of Education, Science and Technology. New Zealand, Ministry of Education. Figures for Australia are for higher education, for New Zealand tertiary education

Figure 1: Value of the Indonesian, Thai and Korean Exchanges rates compared to the Australian \$: 1994=1.0

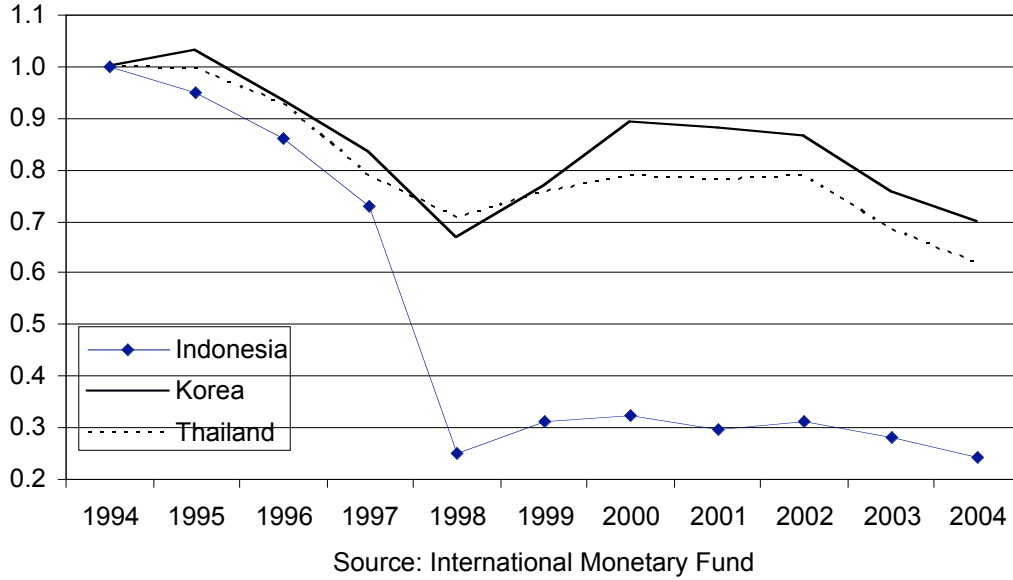
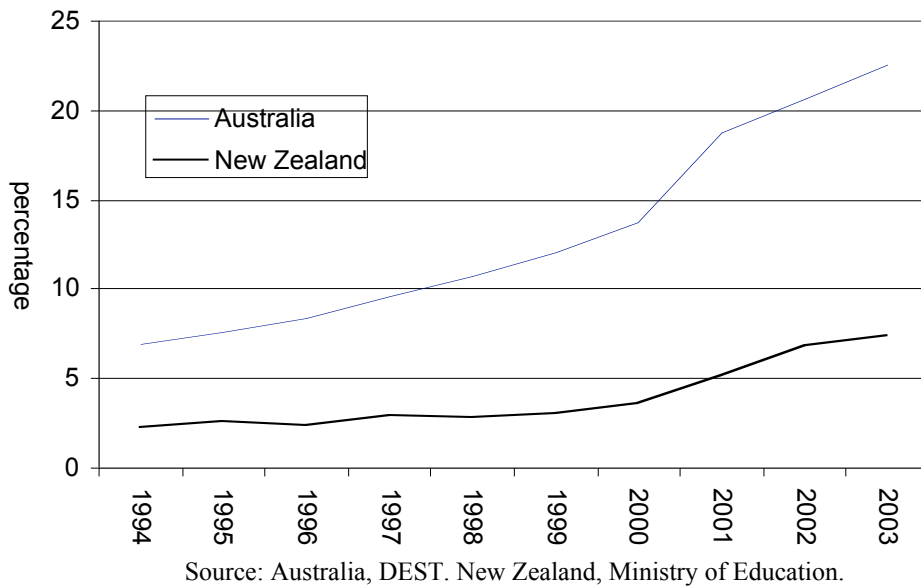


Figure 2: Proportion of International Students in Total Higher Education Students: Australia and New Zealand



Data and Methodology

The main objective of this study is to quantify the impact of two independent variables (exchange rate variation and the reputation of the universities) on the choice of destination for students studying overseas. Some other economic factors that also may have an influence on the destination choice are also included such as the growth of per capita GDP, and growth in real expenditure on public sector education.

The data for the destinations of the students used in the study is for 37 Australian universities and eight New Zealand ones over the years 2000 to 2003. A list of these universities is provided in Table 2. For each of these universities the change in student numbers from the major countries of origin were taken. These countries are China, India, Malaysia, Japan, Indonesia, Thailand, Korea, Singapore, Hong Kong and the United States.

The basic methodological approach was to run a regression using the change in the exchange rate between each country of origin and either the Australian or New Zealand currency as the independent variable and the change in the number of students from each country of origin in each university as the dependent variable. Other relevant variables have also been included. The equation was also estimated with the independent variables included with a one year time lag.

Table 2: Universities Used in this Study

Australian	New Zealand
Australian Catholic University	Auckland University of Technology
Australian National University	Lincoln University
Central Queensland University	Massey University
Charles Darwin University	University of Auckland
Charles Sturt University	University of Canterbury
Curtin University of Technology	University of Otago
Deakin University	University of Waikato
Edith Cowan University	Victoria University, Wellington
Flinders University	
Griffith University	
James Cook University	
La Trobe University	
Macquarie University	
Monash University	
Murdoch University	
Queensland University of Technology	
RMIT University	
Southern Cross University	
Swinburne University of Technology	
University of Adelaide	
University of Ballarat	
University of Canberra	
University of Melbourne	
University of New England	
University of Newcastle	
University of Queensland	
University of South Australia	
University of Southern Queensland	
University of Sydney	
University of Technology, Sydney	
University of the Sunshine Coast	
University of Western Australia	
University of Western Sydney	
University of Wollongong	
University of Tasmania	
Victoria University of Technology	

Results

Equation 1 has been developed by taking the annual change in student numbers (ΔS) that came from each country of origin in each Australian and New Zealand university (for each of the years 2001 to 2003) as the dependent variable and the following as independent variables:

- The change in the exchange rate between the country of origin and country of destination (Australia or New Zealand) (ΔE_d);
- The change in the exchange rate between the country of origin and a country that competes with Australia and New Zealand for student (i.e. the United States) (ΔE_c);
- The growth of per capita real GDP in the country of origin (ΔY); and
- The growth of real government expenditure on education in the country of origin (ΔG).

$$\Delta S = \alpha + \beta_1 \Delta E_d + \beta_2 \Delta E_c + \beta_3 \Delta Y + \beta_4 \Delta G \quad \text{equation 1}$$

Where,

α represents the constant of the equation, and β represents the coefficients of correlation.

The estimated equation is as follows:

$$\Delta S = 19.262 + 0.215 \Delta E_d - 0.060 \Delta E_c + 0.147 \Delta Y - 0.060 \Delta G \quad \text{equation 1.1}$$

Equation 1.1 shows that:

- the relationship of the variation of student numbers with the variation of the current year's exchange rate between the countries of origin and destination is significant. The relation between the change in this exchange rate and the growth of real GDP is also significant (both have a significance level of 0.000);
- the relationship between the variation of student number and the variation of the country of origin's exchange rate with the competitive destination's currency is also close to significant (significance level 0.059). The sign here is a negative one which is what we would expect;
- the R^2 however is only equal to 0.036 which indicates that about 96 percent of factors that might have influence of choosing destination by international students are not included in the equation.

Taking the same variables in Equation 1 we can add three dummy variables to indicate various characteristics of the universities in the study. This is shown in Equation 2. These indicate whether the universities are regionally located (R); are "Dawkins universities" (D) or have a major share of their international students in offshore campuses (O). These dummy variables are:

- R - Equal to 1 if the university is mainly based in a regional centre rather than a large metropolitan one;¹
- D - Equal to 1 if the university is a Dawkins university, i.e. converted from a College of Advanced Education or Polytechnic in the years 1989 to 1999;
- O – indicates the degree to which students are accommodated in off-shore programmes. A figure of 0 indicates that virtually no students are studying in

¹ Metropolitan centres include Sydney, Melbourne, Brisbane, Perth, Adelaide, Canberra, Wellington, and Auckland.

this fashion, 1 mean 5 to 10 percent are, 2, means between 11 and 40 percent are and 3 mean greater than 40 percent are.

Equation 2:

$$\Delta S = \alpha + \beta_1 \Delta E_d + \beta_2 \Delta E_c + \beta_3 \Delta Y + \beta_4 \Delta G + \beta_5 R + \beta_6 D + \beta_7 O \quad \text{equation 2}$$

The estimated equation is as follows:

$$\Delta S = -14.389 + 0.214 \Delta E_d - 0.060 \Delta E_c + 0.147 \Delta Y - 0.059 \Delta G + 0.080R + 0.054D + 0.038O \quad \text{equation 2.1}$$

Equation 2.1 indicates that:

- the relationship between the variation of student numbers and the variation of the exchange rate, the growth of real GDP per capita, the exchange rate to the competitive destination's exchange rate, and the regional category of the university is highly significant (0.000, 0.000 and 0.003 respectively);
- the R^2 is still only 0.048 which indicates that there is about 95 percent of factors that might have an impact on choosing the study destination but has not been covered in this equation.

Taking the same variables in Equation 2 and adding the changes in E_d , E_c , Y and G with a one-year time lag we have developed Equation 3.

Equation 3:

$$\Delta S = \alpha + \beta_1 \Delta E_d + \beta_2 \Delta E_{d,-1} + \beta_3 \Delta E_c + \beta_4 \Delta E_{c,-1} + \beta_5 \Delta Y + \beta_6 \Delta Y_{-1} + \beta_7 \Delta G + \beta_8 \Delta G_{-1} + \beta_9 R + \beta_{10} D + \beta_{11} O \quad \text{equation 3}$$

The estimated equation is as follows:

$$\Delta S = 67.354 + 0.266 \Delta E_d - 0.139 \Delta E_{d,-1} - 0.073 \Delta E_c + 0.166 \Delta E_{c,-1} + 0.111 \Delta Y + 0.037 \Delta Y_{-1} - 0.009 \Delta G - 0.045 \Delta G_{-1} + 0.089R + 0.059D + 0.033O \quad \text{equation 3.1}$$

Equation 3.1 shows that:

- like Equations 1.1 and 2.1, the relationship between the variation in student numbers and the variation of the current year's exchange rate in the destination country and the growth of GDP in the country of origin are both highly significant (0.000 and 0.038 respectively);
- in contrast, relationship with the exchange rate between the country of origin and competitive country and with growth in real expenditure on education are not significant (0.074 and 0.839 respectively);
- regarding the influence of three category of university category the relationship of regional category university is very significant (significance level 0.007). The influence from the other two categories is not statistically significant.
- Out of three types of university, regional category university always shows more attractive for overseas students compare to other two types.

- $R^2 = .075$ in equation 3.1.

It is clear from Equations 1 to 3 that the variation of exchange rate, variation of real GDP growth and the status of university have a significant impact on the choice of destination for international students. Based on the Equations 1 to 3, the following mathematical model has been developed.

The model:

$$\Delta S = f(\Delta Ed + \Delta Y + \Delta U) + C$$

Where

ΔEd represents the variation of exchange rate at country of origin with respect to country of destination, ΔY represents the variation of growth of GDP at country of origin, ΔU represents the status of the university in the country of destination and C represents the constant of unexplained factors.

Individual Countries of Origin

In the previous section it was established that exchange rate variations have an influence on the choice of students' study destination. In that analysis, universities in Australia and New Zealand were chosen as study destinations while ten countries were chosen as countries of origin (China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Singapore, Thailand and the United States). An aspect of interest is the degree to which the students from the various countries of origin are sensitive to changes in the exchange rate between their country and that of the country of destination. To analyse this we have developed one regression equation for each country of origin by taking the variation in student numbers as the dependent variable and exchange rate variations and real GDP per capita variations as independent variables. Each country of origin has been ranked on the basis of its corresponding 't' value.

Table 3: Countries According to their Sensitivity to Exchange Rate Variations

	Country	Beta value	't' value	Significance level
1	United States	0.779	4.945	0.000
2	Hong Kong	0.505	3.131	0.002
3	Malaysia	0.296	2.576	0.011
4	Japan	-0.223	-2.392	0.018
5	Singapore	0.184	1.909	0.059
6	Thailand	0.275	1.478	0.142
7	Indonesia	-0.115	-1.243	0.216
8	Korea	0.098	1.047	0.297
9	China	0.160	0.549	0.584
10	India	0.025	0.076	0.940

Table 3 shows the distribution of countries according to their sensitivity to exchange rate variations.

It can be seen from Table 3 that:

- the relationship between the variation of the exchange rate is significant for the United States (0.000), Hong Kong, Malaysia and Japan (0.018);
- the United States is the most sensitive country to exchange rate variations, followed by Hong Kong, Malaysia and Japan.
- The least sensitive country is India.

Table 4 shows the distribution of countries according to their sensitivity to changes in real GDP per capita.

Table 4: Countries According to their Sensitivity to Changes in Real GDP per capita.

	Country	Beta value	't' value	Significance level
1	Japan	-0.421	-4.527	0.000
2	United States	0.608	3.856	0.000
3	Hong Kong	0.444	2.749	0.007
4	Malaysia	0.263	2.283	0.024
5	Singapore	0.199	2.065	0.041
6	Korea	0.190	2.038	0.044
7	Thailand	0.274	1.475	0.143
8	India	-0.201	-0.608	0.544
9	China	-0.070	-0.242	0.809
10	Indonesia	-0.009	-0.097	0.923

It is seen from Table 4 that:

- the relationship between the variation of real GDP per capita is highly significant for Japan and the United States (0.000) followed by Hong Kong and Malaysia (0.007 and 0.024);
- Japan is the most sensitive country to a change in real GDP per capita ($t = -4.527$ and 3.856);
- the least sensitive country is Indonesia.

It appears from Table 3 and 4 that economically rich countries such as the United States, Japan, Hong Kong are highly sensitive to variation of the exchange rate as well as the variation of real GDP per capita growth.

Conclusion

In this study it is been established that changes in exchange rates to have a significant impact on the decisions made by student about which country they wish to study in. Not only is the relationship between the exchange rate between countries of origin and Australia and New Zealand important but also the exchange rate between the country of origin and other possible destinations is important.

The impact of exchange rates on the decision made by students is by no means uniform across all countries of origin. Students from some countries such as the United States and Japan are more affected by changes in exchange rates then student from countries such as India.

Finally it should be noted that exchange rate variations appear to have a smaller impact on those students from countries with relatively low levels of real GDP per capita. In the context of Australia an New Zealand this is interesting as it is exactly from these countries that many of the students studying in these two countries come from. Clearly there must be a range of other important factors that need studying in order to determine what influences students when they make choices to study overseas. These might include such things as immigration laws, the “herd” mentality of students and the political an cultural reputation of the countries of estimation.

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