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Estimate the impact of external factors on college decision making process for international student. An empirical approach

By

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Thesis advisor: Monica Das

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While writing this thesis, I have not witnessed any wrongdoing, nor have I personally violated any conditions of the Skidmore College Honor Code.

Introduction

As globalization grows stronger, more and more students choose to pursue their education dream in foreign countries. Meanwhile, the economic benefit that international students bring to host countries is undeniable. Thus, the demand for higher education continues to increase, consequently the competition among higher education institution become intense. With such a significant presence on the economic benefit, contributing by the international students in United State in the academic year 2016, It is time to examine the international students' thinking process while they choose United States Universities as their four-year higher education location. Besides, it would provide an insight to admission officer, who worked closely with potential international candidate, to promote and attract international students in their preference. Therefore the administrator and college could point on those factor and improve their working goals. Based on this, I merged data by myself and estimate the impact of different factors on the decision-making process for international students in United States. My paper aims to analyze the key determinant of college decision making process for International students. Moreover, this paper attempt to weight the significance of each factor that affect international students' decision.

Students' thinking process and decision-making process have been widely discussed among significant number of literatures.(Bowers & Pugh, 1972; Branco Oliveira & Soares, 2016; Dolan, Jung Jr, & Schmidt, 1985; Kallio, 1995a; Maringe & Carter, 2007; Mazzarol & Soutar, 2002; Perna, 2000; Rubin, 2011; Stange, 2012) Many studies have analyzed and simulated the college-decision process for home students and all students' group. Economist Kallio analyzed the graduate students in University of Michigan. German econometrists Hübner analyzed the sole factor tuition and its impact on enrollment behavior.(Hübner, 2012) Also, there are economists put their observation to international students in Australia, Portugal and UK. (Branco Oliveira &

Soares, 2016; Maringe & Carter, 2007; Mazzarol & Soutar, 2002) Mazzarol analyze the international students in Australia and they introduced the push-pull factors in the context of decision-making process. They used survey data from 2002 to analyze the determinant of college decision-making process.(Mazzarol & Soutar, 2002) Branco Oliveria and Soares provide a theoretical approach and build their theoretical model based on survey, collected from international students in Portugal universities.(Branco Oliveira & Soares, 2016)

Much less of existing literatures studies particularly the international students in the United States and their key determinant of picking college. This paper does not track the whole thinking procedure and decision procedure of international students while they are choosing their 4-year destination. My paper adopts the idea of push and pull factors from Mazzarol and Soutar's paper but more concentrates on the pull factors and the weighted impact of these factors on the enrollment. Thus, this paper is to analyze the international students' preferences while they choose their college in United States. The main contribution of this paper is threefold. First, it analyze 300 United States institutions' reports and the corresponding relationship between factors and enrollment. Second, I built 4 models separately, based on the three segments of my independent variables, to generalize the key determinant in the decision-making process for international students. Last but not the least, my paper used data from 2016 to 2017 academic year to demonstrate current international students' preference of choosing college.

Unsurprisingly, financial aid and alternative tuition plan will boost the likelihood of enrollment in that specific institution. The ease of connecting and reaching out to professor will also increase the comparative advantage for universities and college in the higher education market. The geographic location is a minor factor that will alter international students' mind but a city-located institution is preferable for international students.

The rest of my paper is organized as follows. Section 2 discusses the economic benefit of international students and reviews the existing literature, separated into empirical and theoretical literatures, on decision-making process. Section 3 discusses the data and methodology that I used. Section 4 illustrates my results and finding. Section 5 concludes my findings and discuss the potential topic that researcher would analyze in the future.

Literature review

The decision process of selecting a college is comprehensive and involves different stages of researching and collecting information. (Bowers & Pugh, 1972) Tis is a whole thinking process that will vary depends on different people. Review existing literatures about similar topics helps me to clear my thoughts and find useful information that can contribute in my paper.

To understand the concept more clearly and systematically, I decide to separate my literature review into two sections: the economic effect of international students, and the decision process of international students when they choose college.

The economic effect of International students

In 2005, more than 2.7 million students were pursuing transnational higher education—a 47 percent increase over the 2000 figure of 1.7 million students. The population of International student who pursues a qualified and higher level education in United States increases throughout the years. Despite these developments, the United States continues to be the top host country for students seeking higher education abroad. The number of international students enrolled in U.S. higher education increased by 3.4 percent to 1,078,822 students in 2016/17, with almost 35,000 more students than the prior year in the country on non-immigrant student visas. (NAFASA, 2018)

Nearly 5% of all students enrolled in higher-level education in the USA are international

students, and the numbers are growing. From the mid-1950's, when international student enrollment was only just reaching 35,000, international education in the USA has come a long way.

The significant economic effect that brought by international student was proved by the actual data. Phil and Bahram (2007) analyze the cost and benefit of international students to UK and they try to determine the main cost and benefit. Additionally, they want to estimate the magnitude of each factors. They argue that the full benefit of international student cannot be quantified as international students not only bring direct finical flows but also bring the culture. They mainly focus on the economic benefit which includes the payments that students make for tuition, living expenses, and taxes. These three elements will directly contribute to the UK GDP. They also mention about the employment is increasing after students graduating. In paper, they used data from UK government to elaborate the impact of the international students which shows that the international students do have a positive influence on UK's economy.

A report from Andrew (2002), also demonstrate the economic impact of international students in New Zealand. He collected data based his surveys which was sent out to fifty schools in New Zealand. By displaying the details of his surveys, Andrew illustrate the detailed expenditure that international students contribute to the consumption of GDP. He also concludes that the international student does contribute to the host country GDP but he only considers the expenditure part.

Andrew (2002) and Phil and Bahram (2007) 's reports shares one common point is that International students do bring direct economic improvement to the host country they studied. Based on these two reports, I found that international students make up only 5% of overall U.S. college enrollments, but they contribute significantly to the U.S. like international students in UK and New Zealand.

According to NAFASA (2008), the obvious economic impact of international students is the statistical result. In 2016 – 2017, international students contributed $36.9 billion to the U.S. and supported more than 450,000 jobs to the U.S. economy.

Figure 1 displays the growing population of international students and along with the economic benefit that international students bring to United States. As we can see from the graph, the green region climb up rapidly which means the economic benefit is enlarged years by years.

The college decision process

Throughout years, many researchers analyzed and conducted the decision process and the key determinant for students when they decide their destination of their college. (Bowers & Pugh, 1972; Branco Oliveira & Soares, 2016; Chen, 2016; Heller, 1999; Kallio, 1995a; Mazzarol & Soutar, 2002; Oliveira & Soares, 2016; Shanka, Quintal, & Taylor, 2006; Simões & Soares, 2010; Van der Klaauw, 2002)Many of these literature results helps colleges to compete in the higher education industry and strengthen their comparative advantage. Most of the paper is used as a marketing tool. Also, many of them talks about the information sources and consumer behavior.

Safety and students

Coston (2004) points out the worries about crime among foreign students studying in the United States. His study helps schools to deal with potential problems that international students may faces while pursuing their academic achievement in United States.

The criminal rate, criminal activities and campus safety are always the topic that students will take into consideration when they choose their college. Coston's team interviewed two groups of international students based on their geographic location. One group comes from urban campus on the East coast and the other group comes from rural campus in the Midwest. Both universities

have a similar number of total students and approximately equal portion of international students enrolled in both universities. Coston used FBI's Uniform Crime Report to analyze the effect of crime rate on the interviewer's worries. In the paper, he used regression and detailed analysis on the result of the survey.

They concluded that international students may be a group that is especially susceptible to criminal victimization because they may not be well-versed in the English language or assimilated into American culture. Difficulties of coping with an alien, culturally different population and a general fear of strangers can make foreign students feel helpless and especially vulnerable to crime therefore making them worry about the possibility of crime happening to them. These articles are saying that International students' worries about the crime which make me to think there might be a negative relation between crime rate and international students' enrollment.

Besides, Coston also pointed out that previous research on the correlates of the general population's worries and fears about crime has shown that urban residents are more fearful of crime than rural or suburban ones. These existing researches was utilized by Coston on the difference of fear between the rural area's international students and urban area's international students. International students who attend rural university have been victim of burglaries and theft most often while international students who attend urban university have been the victim of robbery most often. Coston concluded that urban university foreign students' prediction of future victimization was slightly higher than were those of students at the rural university which is the similar result of the general population. This result make me to think about the impact of different locations on the students' enrollment since Coston reported that urban university's students may have more fear than rural university's students.

Financial aid, cost and enrollment

Previously, many paper analyzed the effect of subsidy on the students' enrollment. Abraham and Clark (2006) discussed the financial aid effect based on the data from the district of Columbia tuition assistance grant program. They pointed out that the amount of financial aid available to students is correlated with individual characteristics that may have an independent influence on their college decisions. Additionally, the price charged for entering a college and university will also make schools attractive to potential applicators. They used data from the District of Columbia Tuition Assistance Grant Program to explorer the effect of reduction in public college and university prices on their college applications and enrollment. The DCTAG apply a tuition reduction on the applicator who comes from D.C region. Abraham and Clark want to find the discernible effect of the tuition reduction on the likelihood that a D.C. students will enroll as a college and is the program affect the type of college that D.C region students apply to.

Abraham and Clark (2006) used data from the College Board on high school students who took the SAT and merged the data on each college or university to which students sent their scores. They adopted a difference-in-differences approach to study District students' decisions about where to send their SAT scores and select student from large cities as a comparison group. By regression model, they examined the effect of the DCTAG program and the relationship between financial aid and college student enrollments. In the end, Abraham and Clark concluded that students are price-sensitive in their college application decisions which means the financial aid will help college to become more attractive to students.

Van der Klaauw (2002) elaborates more about how finical aid can be an important factor to the decision making process of students. In his paper, instead of determining whether the financial aid will attract more students, he focus more on how college can utilize financial aid as

an effective instrument in competing with other colleges for students. In this way, his topic provides insight to my topic since I would like to rank those factors that influence international students' decision. He used data from 1989 to 1993 and applied regression-discontinuity to evaluate the effect of financial aid on students' enrollment. In his paper, he demonstrates how sensitivity that students will react to the amount of financial aid. Additionally, he clearly divided students by the eligibility of applying federal aid and shows the different enrollment elasticity for these two different groups. He found that the enrollment elasticity with respect to college grants was estimated to be 0.86. The elasticity for students who were ineligible for federal aid was estimated to be much smaller. Then, he concluded that financial aid is an effective way in competing with other colleges for students.

Similar to Van der Klaauw's research on single elements, Su-Jane Chen's paper (2006) examine a single factors as well. Su-Jane Chen (2006)'s paper aims to investigate the impact of rising college cost on freshman enrollment as well as the teaching quality in large public university in 2001-2013. She only consider the sole factor -- tuition fee for resident freshman. She used data from University of Colorado. In order to achieve her analysis, she used empirical method and OLS regression model to examine how university's freshman enrollment relates to tuition fee. Based on her research, she concludes that university's freshman are price sensitive. Her study is short and neat but deliveries the important message that tuition fee have a big impact on enrollment rate. Not only Chen analyze the tuition fee solely and find the relationship, but also (Hübner, 2012) examine the impact of changing tuition fee on enrollment behavior in Germany. Hübner's paper analyze the enrollment decisions of the entire population of high-school graduates between 2002 and 2008. He also used empirical method to investigate the relationship between enrollment and tuition fee. From the OLS results, he concluded that there is a negative impact of tuition fee on enrollment

rate. Moreover, he also compared his results with Unites State's results and found that they are similar. However, his result is larger than existing finding in European areas.

Ranking and school choice

Above all, they all analyze how the cos-related factor and financial support relate to enrollment and school choice, Griffith and Rask (2005) analyze a single academic factor--ranking. They used the US News and World Report as a reference to examine the relationship. In order to eliminate the impact of financial aid on students' preference to enroll, they separated the data into two data set. One is with financial aid, the other one is the full-pay sample. By using data from 1995 to 2004, they contains the gender, race along with the ranking from high school seniors with high ability. By using regression analysis, they find that school choice is responsive to changes in rank. Moreover, if the insitution are lower ranked, the less sensitive to rank. The significant of ranking varies based on different gender, races and financial aided students. Overall, Griffith and Rask (2005) concluded that ranking is an important factor in yielding accepted students.

Above all, these papers all disscused how individual factor will have an influence on college-decision process, and enrollment. Coston analyzed the safety components. Van der Klaauw and Abraham and Clark all investigate the financial aid while Abraham and Clark examined the impact of Columbia tuition assistance grant program on high school senior's decision-making, and Van der Klaauw analyze the broader financial aid's impact on school's enrollment. Both their data cannot describe current situation.

Chen and Hübner's paper all investigate the relationship between tuition fee and enrollment behavior. However, the sample countries is different. Chen used data from 2001 to 2013, collected in United States, while Hübner used data from 2002 to 2008, collected in Germany. Eventually,

they share the similar results. The last but not the least is Griffith and Rask's paper (2005). They demonstrate the importance of ranking in the decision-making process for high school senior in United States. The data they used are from 1995 to 2004.

These three papers illustrate serval important components that may appear in the college decision process and how these components (crime rate, financial aid, tuition fee and ranking) will affect the enrollment. However, each paper only considers one exogenous variable. The decision process is comprehensive and involves multistage. (Kallio, 1995). It involves a diversity of factors. As one of the earliest studies, Bowers and Pugh (1973) indicate that there are 22 considerations when they collected from students. Thus, there are studies that analyze multivariable involved in decision-making process.

Multivariable and analysis:

Kallio's (1995) paper, which is about college choice decision of graduate students, is compelling in the field of students' decision making. Although this literature is more related to graduate students, Kallio also discusses the overlap area with undergraduate students. Kallio's paper used a survey based method to help him collect data from a major research university. To analyze the importance of each factors that he collected, Kallio ran a regression model to demonstrate the scale of importance and preference by students in his paper.

Kallio defines the two fundamental hypotheses for his paper: first is that selecting a graduate school to attend is a multistage decision process affected by a variety of factors. This statement is also being proved in Branco Oliveira and Soares's paper. The multistage decision process involves the students' personality, information gathering, college actions, and the features of college or the program. The second is the relative importance of different factors will vary based

on different ages. For a simple reason that different ages may face different life stage and their career development as well.

Kallio's study is based on a 1986 survey of 2834 students admitted to a master program at the University of Michigan. Kallio illustrates the details about how he cleans and select the relative factors by bivariate analyses. The results of bivariate analysis suggest that factors like the following were associated with the enrollment decision: age, residency status, indicators of a student's academic ability, alumni status, campus visits, financial aid, spouse job or education plans , the ability to continue working in a current job, and college characteristics such as program quality (which is also being mentioned in other articles and the quality is complex), geographic location, research opportunities, recruitment by faculty, social opportunities, quality of daily campus life and cost.

Kallio also develop scales that incorporate both the ratings of importance on items as well as the rating of preferred school. With this method, it allows the results of the factor analysis to represent four decision dimensions in the analysis. Kallio also elaborate the three steps of developing scales.

The compelling point of this paper is that Kallio used regression model to test the importance of each factor that related with the enrollment decision.

With enrollment decision being the dependent variable, he used age, gender, gender separated by older, residency, alumni status, and four scales that he developed in the early section to run the regression model.

His regression model can be a sample for my paper because, it used the same method that I want to use. At the same time, he contains more comprehensive views in his model. The only difference between his model and my model will be the data source. His data source comes from

interviews and surveys but my data source was from the authorized database. Because of this difference, his research cannot generalize the importance of each factor in the college decision process. The question setup may have a subjective basis which lead people to pick specific answer and people may not tell the truth. These are potential risk that his research contains.

He concludes that both similarities and differences between prospective graduate and undergraduate students in terms of the relative influence of factors affecting their selection of a college or university. Between graduate and undergraduate, the 4 years or maybe more than 4 years gap can alter people's mind in terms of life stage and personal concerns. However, the other general factors remain the same. The element that undergraduates and gradates share is the strong role that residency plays in college choice decisions and the importance of academic environment factors such as the reputation and quality of the institution and its programs, course diversity, size of the institution.

Targeting to students who were entering Portuguese university for the first time, Simões and Soares (2010) focus on students' decision-making process and concentrate on the early stage of the decision process which is the information collecting stage. Their research is mainly about the consumer behavior model. The consumer behavior model refers that consumers will collect more information before buying the service. As college is an experience good, people will consider more as the opportunity cost is relevantly high. Simões and Soares (2010) collected information from 1641 students who enter University in Portugal and used a quantitative approach to explain their data. They ask students' perception about choice factors and information sources during their searching stage and rank their surveys' result. They found that Internet serve as a key source for students to get information. Regard to choose factors, their research display that the distance from home rank the first place and become the most important factors among students who participate

in the survey. However, this may be altered for international students as international students attend foreign university. They also point out that education cost is another aspect that students will consider. Besides, the academic reputation is the second most important consideration of students. All these three elements are also being considered in Kallio's paper. The difference is that Simões and Soares's sample group is undergraduate while Kallio's paper analyzes graduate students. This is the reason that Simões and Soares did not mention about the life stage concern and the spouse consideration that Kallio talks about.

These two papers (Kallio, 1995b; Simões & Soares, 2010), we do see that undergraduate and graduate are most likely share the same concern as cost, reputation and the residency status. However, Kallio, Simões and Soares consider the student as a large group which contains host country students and international students. As my topic is focusing on the international students, it is important to understand the different desires between international students and domestic students. Firstly, the distance from home will be less relevant in the decision process for international students as they already leaving their home country.

Paper from (Shanka et al., 2006) used correspondence analysis to analyze the factors influencing the decision process of international students in Australia. In their paper, they list six elements, which are the choice criteria and reveal the importance of each element depends on different home countries. The choice factors, that Shanka, Quintal, and Taylor considered, are proximity to home, quality/variety of education, cost of living, friends study or living in the destination, family recommendation and safety. The proximity to home plays minor in this research which is different compared with research among whole student group. The quality of education can refer to the academic reputation of the university is the same component that all other paper has mentioned. Additionally, the cost of living is another repeated factor that has been discussed

in many paper. More importantly, the recommendation from friends and family plays an important role in the decision process. For example, when they compare different countries' international students, they found that Indonesian students more tend to choose school with friends living around.

This study emphasizes the two-dimension solution portraying the relationship between country of residence and decision factors. Moreover, this study evokes that single element cannot illustrate the whole quality of education. The quality of education is comprehensive as well. (Branco Oliveira & Soares, 2016) they elaborate more in details about the factors that would affect international students' decision.

As attracting international students is in an increasing trend for many institutions in recent years, Branco Oliveira and Soares (2016) focuses on how to market and promote the higher education institutions in the desire of these universities. Branco Oliveira and Soares aim to seek the factors that influence the international students' decision and propose a model which helps universities to establish market strategies. Theological concept that involves in this paper are consumer behavior in services, the buyer decision model. And push and pull factors.

They split the article into four sections: first, illustrate the motivations for international students to experience foreign universities. Second, Branco Oliveira and Soares explain the decision factors that will influence people's choice. Then, they discuss the methodology used in this paper. More importantly, they demonstrate the importance of information sources in the whole decision process. Last but not the least, they conclude their finding and exhibit their conceptual model for the decision process of international students.

In the section that discuss the motivation to study aboard, Branco Oliveira and Soares demonstrate the selecting process of international students and the information they will collect during their research. At the beginning, a large portion of the paper is filled with the explanation

of push and pull factors. The push factor is forceful and which is the factor that related with your home country. The push factor makes people want to leave or shift. The pull factor is elements that attract people. In the study aboard case, the push factor refers to the country of origin economic or political issues, influencing the choice of a destination country. Besides, the push factor can also be the low quality of local universities.

On the other side, the pull factor is related to the attraction of the country that student choose to visit. The pull factor might be the reputation and academic quality of the universities, the international recognition of the education. Cost can also be a pull factor that attracts student to study aboard. The cost is not only the tuition but also the living cost, the travel cost. Moreover, the crime and safety situation can be considered as a pull factor as well.

Branco Oliveira and Soares point out that self-motivation is another factor involved when people choose to study aboard. They also say the personal recommendations of parents, family and friends on the destination country or institution are considered. Although, it is easy to determine the type of the factor, the availability of information is another relevant factor for international students. If the information is easy for students to archive, then the better decision will make. This argument is also been made in Simões and Soares which analyze the information sources for students.

In the next section, Branco Oliveira and Soares demonstrate the importance of information sources in the buyer decision model. They categories the information that student can collect from various sources into three different type: first is internal sources, controlled by the institution, interpersonal sources, and external sources, not controlled by the institution. Then, they regroup the factors that mention in first section into these three categories. They also agree that Internet is the main source for international student to collect information.

From all these paper, we could find that, in terms of decision-making process, there is an overlap between local students and international students. They will all consider academic reputation, tuition fee, and financial aid and so on.(Abraham & Clark, 2006; Branco Oliveira & Soares, 2016; Chen, 2016; Hübner, 2012; Kallio, 1995b; Shanka et al., 2006) The most obvious difference is the proximity to home, and sometimes the importance of different factors may vary depends on the home country of the student particularly. As Shanka (2016) stated that "Singapore students would more likely choose Perth over other choices on a combination of factors such as proximity and educational quality whereas Malaysia students tend to base on safety and educational quality."

Most of these paper, used empirical method to estimate the impact of different factors influencing students while they are making college decisions.(Chen, 2016; Heller, 1999; Hübner, 2012; Kallio, 1995a; Mazzarol & Soutar, 2002; Shanka et al., 2006; Van der Klaauw, 2002) Branco Oliveria and Soares (2016) provide a theoretical approach based on data collected from international students in Portugal universities.

Meanwhile, all these studies focus on different region. Kallio analyzed the graduate students from University of Michigan; Mazzaroll examined the international students in Australia; Abraham and Clark analyze American high school senior; Van der Klaauw discussed American high school senior as well. At the same time, Chen (2006) put her eye on American university; Hübner (2012) analyzed the German universities. Branco Oliveira & Soares analyze the international students in Portugal.

However, few of studies put their attention on the international students in United States specifically. Also, data's year is all around 1980s to 2000s. Only Chen's paper used the data from 2001 to 2013 which can explain some current situation. Thus, my data set will select recent data

from 2016 to 2017. More importantly, my paper aim to fill the gap that fewer of studies analyze and demonstrate the international students' enrollment in United States and how it is related to different factors.

Methodology and Data

After reviewing existing literatures about the thinking process of selecting college by international students, I decide to use a regression model with cross section data set. Not using a theoretical approach but an empirical approach. Instead of collecting all those data from each institutions website, my data set was collected and merged from various sources. IPEDS is one of my data source. IPEDS is integrated postsecondary education data system that belongs to national center for education statistics and United states department of education. From IPEDS, I used the costume feature to obtain most of my required datas and more importantly, all my institutions are from United states. In the IPEDS system, over 7,000 institutions upload their data set and survey data. It contains various sources including the enrollment details, admission history and institutions' characteristics and more.

Adopted from Mazzarol (2002) and (Oliveira & Soares, 2016)'s papers, the independent variables are organized into three categories: (i) Academic reputation of college/university, (ii) Student expenses and (iii) College/University environment.

(i) Academic reputation of college/university

For academic reputation, I choose different indicators to demonstrate each institution's academic power. Ranking is the major factor that represent institutions' strength. (Dill & Soo, 2005; Kallio, 1995b) For international student who does not have the same chance as domestic student to do campus tour, they rely more on the public resources. Most of the International students did school research online and obtain information from authorities like U.S. News. I collect the general

national ranking from U.S. New website.(Griffith & Rask, 2007) The U.S. News is a media company that publish education news about the world and America. They publish United States College ranking each year based on their algorithms. As U.S. News is a website that people from foreign countries can also access to this website and explore the institution's ranking. It becomes an indicator that people will refer to when they are making their college decisions. (Griffith & Rask, 2007)While I was collecting the ranking data, I found that U.S. News separated the ranking system based on the type of institution. Not having a comprehensive data set, they are ranking universities and Liberal Arts College separately. Moreover, there are institution that I found from IPEDS do not attend the ranking system. Therefore, I decide only to look on the institution that attend the U.S News Ranking system. The lack of ranking will affect people's decision and my regression result. Dill and Soo (2005) says that students and faculty ratio can affect people's academic quality. Additionally, Pascarella and Terenzini (1991) argues that students and faculty ratio may influence people's early career path as people have different chance to talk with their professor, in the book *How college affect students*. Therefore, I include the students and faculty ratio as an indicator of academic reputation. The students and faculty ratio can be a representative of whether academic support is easy to access for students.

Kallio (1995) argues that graduation rate can be another indicator for academic reputation. As the academic quality is evaluated by multi-aspects, I contain the graduation rate as well.(Dill & Soo, 2005)

(ii) Student expenses

Cost is a comprehensive factor that involves in the decision process. Many existing literatures argues and discuss the relationship between cost and choosing schools. Hence, people are sensitive about money spending (Chen, 2016; Hübner, 2012). Hübner (2012) also states that there is a

negative relationship between enrollment and tuition fee changing. In my paper, I am defining the cost as a combination of school cost and life spending. For school cost, I refer to the total cost of attending to the institution. The total cost of attending to the institution is not only the tuition fee but also the boarding and meal plan fee. Collecting my data from IPEDS, I have the tuition fee per academic year and the total boarding fee. In addition, I collect the book and supplies expenditure from IPEDS which serve as further explanations to the school cost.

Life spending is another expenditure that student may faces when they enter college. Especially for international students, transportation fee and visa application fee is another factors that they have to consider while choosing their final destination of college. I would like to have individual expenditure of flight ticketing and visa fee. However, as the IPEDS is a general system that data was collected based on each institution's report. I do not have a comprehensive set of expenditure. Instead, I used the other expenditure for the life spending that is reported by each institution in the IPEDS system to demonstrate the average spending of their students. Also, the life expenditure may varies depends on individual's household wealthy. The economic situation varies from household to household.

There is a factor that may help student to pursue their college dream which is financial aid. Refer to my literature review, Van der Klaauw (2002) finds that financial aid will have a positive impact on college decision making process. The more financial aid the school or the state could provide, the more possibility that people may choose to attend the school which provides higher financial aid. While in my data searching, I was not using individual based data set. I could not find how much each school pay for each students. Additionally, according to school finding, the financial aid will vary depend on individual's academic behavior, the effect of individual financial aid is hard to determine. But we could determine the general effect of financial aid on

international students group. Alternatively, I used the average financial aid amount that each institution paid to students to be the finical aid factor in my dataset.

Not only financial aid can help students whose family may not able to afford the tuition fee, the alternative tuition plan can also be the method to reduce the pressure financially and effectively. Hoenack and Weiler (1975) discuss the alternative tuition schedule may help university in terms of its enrollment. Therefore, I collected data from IPEDS to check if the university provides an option for student to choose alternative tuition plans.

(iii) College/University environment.

Environmental factors are factors that related to geographic location of the university. The infrastructure, safety and diversity of the state where the university is located. From Kilo and other people's research, they all list that distance maybe a factor for students while they are choosing college. International students, a different group, distance may not be a consideration. Therefore, instead of discussing the distance and in-state or out-state situation, safety is an important component to take into consideration. (Diana and Ana) Sending children to another area or even another strange country, safety is the first element that parents would love to look at. Campus safety and security is also an indicator for students' satisfaction. Studying and living in a secured area is the major goal for international students and their parents. Safety indicator is not available from IPDES, I used criminal data from United States federal bureau of investigation to demonstrate the safety level of the region. The criminal rate is the most direct and accurate data that we could find from the United States FBI website which will provides students and their parents a snapshot of how safe the college is in the college area. Moreover, I use the separated criminal rate to illustrate more closer. The separated criminal rates are violent criminal rate and poverty criminal rate. Violent crime is composed of four offenses: murder and no negligent manslaughter, rape,

robbery, and aggravated assault. Poverty crime includes the offenses of burglary, larceny-theft, motor vehicle theft, and arson. All these criminal rates are from state level.

Also from Coston (2004), he argues that students in different location may face different criminal rate. Besides, I collect each institution's location and its degree of urbanization. The location can tell the story of the community and availability of resources around the college. Hence, it allows students to search for multi resources around the university. Also, many researches and articles talked about the inequality of educational resources in United States based on the geographic location. Also, Galster and Killen (1995) shows that there are more opportunities in metropolitan area. Also, more firms are located in metropolitan area instead of rural areas. In other words, it shows that student who go to university in metropolitan area will have more job opportunities than students who go to university in rural area. Similarly, in metropolitan area, there will be more outside resources and social resources that can help students in their four year college life. Additionally, the public transportation will be different based on the geographical location for a simple reason that large city need to carry more people and embrace more people. Urban university might offer you more big business internship opportunities, or larger non-for-profit internships, while a school in a smaller town might have a very large campus and more on campus activities and opportunities. (Galster & Killen, 1995) Moreover, transportation may be another issue. Due to the fact that International students may not able to drive in United States when they first visit U.S, most of them rely on the public transportation to do grocery shopping, visiting attractions or visiting friends.

In my paper, I am going to only assume that people may have a tendency of choosing school where it is more well-build and modern. Since international students may use the public transportation and they want to seek for more opportunities for their future. Therefore, it is crucial

to consider the location of university and make sure it is in their desire.

The last but not the least is the diversity of the area. Existing literatures has illustrated the importance of family or friends recommendation that will affect students' desire.(Mazzarol & Soutar, 2002; Oliveira & Soares, 2016; Shanka, Quintal, & Taylor, 2006) Also, students more tend to choose school where their friends are around.(Mazzarol & Soutar, 2002; Shanka et al., 2006)

Above all are determinant that may affect students 'final decision on college. The most important data is the dependent variable which is the total number of international students. The number of international students is collected from IPESD. Instead of using the total number of international students in each institution, I used the new enrollment of students who come from foreign school in fall semester. Also, I collect the data from previous year, as an indicator of existing international students in the institution for reference. In this way, the existing international student's number can be an attracting point for new students and there is a potential that their friends are around.

After collecting all these data, I filtered out institutions from 7,000 institutions based on the ranking report. Since many institutions do not attend the ranking system and this narrow my observation from 7,000 to 300. And place a dummy variable if the institution is liberal art college to separate my result between university and liberal art since they use different ranking system. I also drop the number of program since none of the selected institution report the total number of program they offer to students.

Model setup and others;

In my model setup, I used my own cross-section data which contains variety of variables that I discussed in data collecting section. Because the background research from NAFSA shows the economic benefit brought by international students in academic year 2016 -- 2017, all my data

collected is from 2016 to 2017 academic year. As many people any talks about the impact of single variable on college enrollment in general, my researches shows the impact of listed variables on college enrollment for international students. Also, it is a research that contains 294 institutions in United States not a research that only contains one institution in United States.

The dependent variable is $EnrollInt_i$ which represents the number of freshman international undergraduates who enroll in the i[th] institution in academic year 2016-2017. For international students, I refer to students' state of residence is outside of United States. A student who has no prior postsecondary experience attending any institution for the first time at the undergraduate level. This includes students enrolled in academic or occupational programs.

My independent variables are: $GradRate_i$,$Rank_i$,$StudToFaculRatio_i$,$LacDummy_i$, $Costoutsate_i$, $Tuition_i$, $BokSupCost_i$, $Bording_i$, $OtherCost_i$, $FinacialAidNum_i$, $AlterTuiPlanDummy_i$, $TotalCrimeRate_i$, $PropCrim_i$, $VioCrim_i$, $ExistEnroll15_i$ and, $DegreeUrbanization_i$.

Expenditure variables:

$Costoutsate_i$ is the total cost of attendance for out-of-state full-time undergraduate students living on campus for academic year 2016-2017 in i[th] institution. It includes in-out-of-state tuition and fees, books and supplies, on campus room and board, and other on campus expenses.

$Bording_i$ is the boarding and meal fee for all students in i[th] institutions.

$Tuition_i$ is the total amount tuition fee that international students have to pay to ith institutions. Normally, the higher the tuition, the lower enrollment it will be.(Chen, 2016)

$BokSupCost_i$, is the average cost of books and supplies for a typical student for an entire academic year in i^{th} institution.

$OtherCost_i$, is the amount of money (estimated by the financial aid office) needed by a student to cover expenses such as laundry, transportation, entertainment, and furnishings for an entire academic year in i^{th} institution.

$AlterTuiPlanDummy_i$ is a dummy variables that shows if i^{th} institution has an alternative tuition plan for students to choose. 1 stands for yes, 0 stands for no. An alternative tuition plan can help students who cannot afford the school cost and also at the same time attracts people to enroll in i^{th} institution. (Stager, 1989)

$FinacialAidNum_i$ is the number of undergraduate freshman who were awarded any financial aid.

Academic factors:

$Rank_i$ is the national ranking for i^{th} institution based on U.S. News report. In this section, it is a mix of Liberal Arts College and university.

$StudToFaculRatio_i$ is the number of students who attend a school or university divided by the number of teachers in i^{th} institution based on the data from academic year 2016-2017. (Add reference even you already state that in your data collecting)

$LacDummy_i$ is another dummy variable that indicates the type of i^{th} institution. If it is a liberal arts college, the dummy variable will be 1, otherwise, it will be 0.

Environmental factors:

$ExistEnroll15_i$ is the number of first-time international undergraduates who enroll in the i^{th} insitution in academic year 2015-2016. Here, it is an indicator of existing population of international students as people tend to apply to school where their friends are around. (Mazzarol

& Soutar, 2002)

$DegreeUrbanization_i$. is a dummy variable. It identifies the geographic status of a school on an urban continuum ranging from city to rural area. They are based on ith institutions' physical address. To clean up the data, I dropped the size number for city, suburb, town and rural. I only keep the city type of the location. In $DegreeUrbanization_i$, 1 = city, 0 = suburb, town, or rural.

$TotalCrimeRate_i$ is the total criminal rate per 100,000 people in 2016 and the determinant is the state based on i^{th} institution's location. (Coston, 2004)

$PropCrim_i$ is the property criminal rate in 2016 based on different states.

$VioCrim_i$ is the violent criminal rate in 2016 based on state level.

In order to analyze the three categories of variables, I build three separated models.

Model 1 analyzes the expenditure factors, model 2 discusses academic factors, and model 3 explain the environmental factors.

Model (1)

Adopted from Chen's paper where she used double log method to analyze the percentage relationship between university's freshman enrollment and tuition fee, I applied double log to my model 1 to estimate the impact of expenditure. Model 1.2 is the total cost breakdown into boarding, tuition, and other expenditure factors. (Chen, 2016)

$$\ln(EnrollInt_i) = \beta_0 + \beta_1 \ln(Costoutsate_i) + \beta_2 FinaAidNum_i + \beta_3 AlterTuiPlanDummy_i + \varepsilon_i$$

Model(1.2)

$$\ln(EnrollInt_i) = \beta_0 + \beta_1 \ln(Boarding_i) + \beta_2 ln(OtherCost_i) + \beta_3 \ln(Tuition16_i) +$$

$$\beta_4 ln(BokSupCost_i) + \beta_5 FinaAidNum_i + \beta_6 AlterTuiPlanDummy_i + \varepsilon_i$$

Model (2)

$$EnrollInt_i = \beta_0 + \beta_1 Rank_i + \beta_2 StudToFaculRatio_i + \beta_3 GradRate_i$$
$$+\beta_4 LacDummy_i + \ \varepsilon_i$$

Model (3)

$$Enroll16Int_i = \beta_0 + \beta_1 ExistEnroll15_i + \beta_2 TotalCrimeRate_i + \beta_3 PropCrim_i$$
$$+\beta_4 VioCrim_i + \beta_5 DegreeUrbanization_i + \ \varepsilon_i$$

As double log can show the change in percentage, it will be reasonable to see if the existing population growing by 1 percent. Also different schools share different amount of international students, it is fairer to compare the percentage.

$$\ln(EnrollInt_i) = \beta_0 + \beta_1 \ln(ExistEnroll15_i) + \beta_2 TotalCrimeRate_i + \beta_3 PropCrim_i$$
$$+\beta_4 VioCrim_i + \beta_5 DegreeUrbanization_i + \ \varepsilon_i$$

Model (4)

Model 4 is a consistent model with all elements that listed above in Model 1 to 3. While testing for the multicollinearity, the VIF value for Rank, Total criminal rate and double-log tuition are 5.50, 5.03, and 5.02. Ranking and tuition are key determinants that has been discussed in previous literatures. Also there are property criminal rate and violent criminal rate in the model to illustrate

the story of safety related to enrollment. Thus, I dropped the total criminal rate to avoid multicolllinearity.

$$\ln(Enroll16Int_i) = \beta_0 + \beta_1 \ln(Boarding_i) + \beta_2 \ln(OtherCost_i) + \beta_3 \ln(Tuition16_i) + \beta_4 \ln(BokSupCost_i) + \beta_5 FinaAidNum_i + \beta_6 AlterTuiPlanDummy_i + \beta_7 Rank_i + \beta_8 StudToFaculRatio_i + \beta_9 GradRate_i + \beta_{10} LacDummy_i + \beta_{11} ExistEnroll15_i + \beta_{13} PropCrim_i + \beta_{14} VioCrim_i + \beta_{15} UrbanlizationDummy_i + \varepsilon_i$$

$$i = 294, \text{t} = 2016$$

Expenditure factors:

As a matter of fact, the price sensitivity at the institution has been steadily increasing at an alarming rate since the 2008 recession. (Chen, 2016) Also the demand for higher education is rather price irresponsive, the freshmen at the university are found to be highly price sensitive. (Chen, 2016) Thus, I expect a negative sign for all the expenditure components: $Costoutsate_i$, $Bording_i$ $BokSupCost_i$, and $OtherCost_i$. Especially$Tuition_i$, since it is the most discussed factor in enrollment behavior and the university's affordability is undoubtedly a big topic.(Chen, 2016; Hübner, 2012)

An alternative and affordable way to pay tuition will increase the possibility that students attend university regularly and without pressure. (Hoenack & Weiler, 1975; Stager, 1989) Thus, I expect a positive sign on the correlation between $AlterTuiPlanDummy_i$ and $Enroll16Int_i$

$FinacialAidNum_i$ is another sole factor that been discussed widely in the field. Not only the

school financial aid but also the state financial aid will increase the enrollment rate. (Braunstein, McGrath, & Pescatrice, 1999; Kallio, 1995b; Van der Klaauw, 2002a) Thus, I expect a positive sign on $FinacialAidNum_i$ as well.

Academic factors:

$Rank_i$ As a strong evidence for academic background, I expect to see a positive sign.(Kallio, 1995a)

For $StudToFaculRatio_i$, I would like to find a positive relationship between it and enrollment as book how college affect students, it says that students and faculty ratio may influence people's early career path and if people are more easier to talk with their professor, the better academic quality they will receive. (Dill & Soo, 2005; Pascarella & Terenzini, 1991)

Environmental factors:

$ExistEnroll15_i$ From Mazzarol and Soutar's argument that people tend to apply to school where their friends are around, I expect a positive relationship between $ExistEnroll15_i$ and enrollment. (Mazzarol & Soutar, 2002)

$DegreeUrbanization_i$ Due to the fact that more opportunities will be found in city area, I expect a positive sign for urbanization dummy. (Galster & Killen, 1995)

For safety factors, as international students will concern more and feel unsecure if there is a comparatively high criminal rate. (Coston, 2004) I expect a negative sign for these three safety factors:$TotalCrimeRate_i$, $ropCrim_i$,$VioCrim_i$.

Using VIF method to check the multicollinearity, Model (1), model (2), and model (3) all pass the VIF with none of the variables' VIF value greater than 5. Model (4) does not pass the multicollinearity test at first, but it passes when I dropped the total criminal rate variable. (Table

2.0)

Results and Discussion

Model (1&1.2)

In Model one, the result demonstrates how international students' total expenditure, financial Aid and alternative tuition plan related with international students' enrollment in academic year 2016 to 2017. All the results are statistically significant and are positively related to international students' enrollment. (Table 1.0)

The results suggest that if the number of financial aid increase by 1 unit, the total freshman international students' enrollment will increase by 0.00077 percent. This finding provides a support for Van der Klaauw's finding, the importance of financial aid as an effective instrument in competing with other colleges for students. (Van der Klaauw, 2002b) Also this evidence reemphasis that financial aid has an impact on the college attendance rate of middle- and high-income youth. (Dynarski, 2000)Meanwhile, if the college or university could provide an alternative tuition plan, it will attract 0.84% freshman international students to enroll in this institution. This is a strong evidence to support the existing argument about cost-related policy will be beneficial for students in term of increase the demand of enrollment in universities. (Frenette, 2005; Hoenack & Weiler, 1975)

The result of financial aid and alternative tuition plan all confirm my hypothesis in previous section. However, it is odd to find a positive relationship between cost and school enrollment. From model 1's result, if the total expenditure increase by 1%, the international

students' enrollments will increase 3.2%. This results contradict to my expectation. Plus, it does not support the previous conclusion that students are money sensitive.(Chen, 2016)

In model 1.2, where I divide the overall expenses into school boarding fee, other expenses , book supply fee and tuition, Model 1.2 shows a different results. Not all regression results are statistically significant, alternative tuition plan's p-value is 17%, other cost's p-value is 53.4%, books and supply's p-value is 62.4%. Moreover, the relationship between other cost and freshman international students' enrollment altered to negative.

At the same time, they still share common points. The OLS result of financial aid and alternative tuition plan remain positive and provide a continuous evidence for Van der Klaauw's and Dynarski's findings as well as my hypothesis. Except the other cost, all other expenditure variables remain a positive relationship with freshman international students' enrollment.

In Model 1.2, it still shows that the relationship between three cost-related factors and enrollment are positive. If the boarding fee increase by 1%, the school enrollment will increase by 2.3%. If the books and supply fee increase by 1%, the freshman international students' enrollment will increase by 0.11%. If the tuition fee increases by 1%, the freshman international students' enrollment will increase by 0.60%. The magnitude demonstrates that tuition fee, books and supply fee have less impact while boarding fee has more impact on freshman international students' enrollment rate.

All these three results does not match my expectation from previous section, especially the tuition fee. As a negative relationship was found by Hübner when he analyzed the impact of tuition fee on enrollment rate, my result does not provide a support for this argument.(Hübner, 2012). However, it put evidence for that tuition fee is less related to the enrollment and the

results shows that the boarding fee are more correlated with enrollment which is similar to Donald's finding that tuition is somewhat less effective on enrollment rate.

Since past literature has basically highlighted that expenditure is a very big factor for students, if they spend too much, they may choose to study in another college. All these positive signs contradict to the related literatures and the fact that students are cost sensitive. (Chen, 2016; Hübner, 2012).

This unexpected sign might be caused by the fact that people are less consider the expenditure. In turn, they shift their concern more into the financial support, academic support and on campus resources that students could experience. This confirms the finding from Heller's paper, tuition fee has less impact on the enrollment rate while financial aid could be a better tool for colleges to continuously attract students. (Heller, 1999)

Another potential explanation for this unexpected sign might be the data itself. Since the expenditure data I used was collected from all student group. In other words, it is not a focus on international students' group particularly. Therefore, it may not explain the international students' behavior fully and the average expenditure from all students has a potential to alter the sign.

Except these unexpected results, the negative impact of other cost is found by the result. If the other cost increase by 1%, the enrollment will drop by 0.1%. This is the only finding from my result that confirm Chen's and Hübner's findings about cost-related factor.

Overall, financial aid and alternative tuition plan is undeniable. Hence, it implies that any support for college spending that provides to international students will boost the enrollment of international students. This also adds more evidence to our previous literature from Van der K,

Frenette, Hoenack and Weiler that cost-related policies and support will be beneficial for enrollment rate.

Model (2)

Based on my OLS regression test, the relationship between academic factor and freshman international students' enrollment are all statistically significant except for the Graduate rate. From the result table (Table 1.0), there is a negative correlation between institutions' U.S News ranking and freshman international students' enrollment. It demonstrate a situation when rank increase by one the international students' enrollment will decrease by 1.7628. This finding contradicts to my expectation and does not provide evidence for Griffith and Rask's findings, U.S News and World report is an important factor in yielding accepted students. (Griffith & Rask, 2007) At the same time, this does not support Shanka, Quintal and Taylor's result, the rankings has a definite impact on the decision-making process.(Shanka, Quintal, & Taylor, 2006) There are three reasons that might be able to explain this unexpected sign. The first, U.S News and World report ranking is not a good indicator for academic factors. This will be discussed more in the context of limitation. Furthermore, the reason could also be that the dependent variable that I used is enrolled international students. In other words, these international students are already in the universities or colleges. Hence, the consideration of ranking will be less important after their admitting into their college and will shift to other academic quality that they can experience on campus. For example, the student-to-faculty ratio. Last but not the least, the other reason why ranking is negatively related to freshman international students' enrollment is that the possibility for international students to change another school is lower. Plus, for international student, the

higher the ranking, the more difficulty it will be to apply and the opportunity cost is higher. That is the reason the ranking is negatively related with the enrollment.

The sign for student to faculty ratio is positive. More importantly, the coefficient is large. The regression results illustrate that if the student-to-faculty ratio increase by one, the freshman international students will increase by 16.79. This implies that students do care about the impact of student-to-faculty ratio rate and student-to-faculty rate have a positive influence not only for students but also for the enrollment.

The LAC dummy is just an indicator to distinguish intuitions' type between university and Liberal Arts College. However, it is surprisingly to find that if the institution is a Liberal Arts College, the willingness to enroll will drop dramatically as the result shows a -109.21. This findings shows that there is a greater desire for international students to enroll in university instead of liberal arts college.

The graduation rate is not statistically significant and also does not match my expectation. The finding shows a negative sign and reveals that if the graduation rate increase by one, the freshman international students' enrollment will decrease by 0.07.

Overall, people are less concerned about school rankings which does not follow Griffith and Rask's finding and my prediction. In turn, more attention is given to the ratio of school professors to students. In other words, international students' decision-making process are more influenced by the resources that institution could provide but less influenced by the ranking that outside website provide to them. They concern more about the inner and actual resources but not the outside evaluation.

Model (3)

Model 3 reveal the impact that environmental factors bring to international students' enrollment. Based on the results, existing enroll of international students, urbanization dummy, violent crime rate and property crime rate are statistically significant. Only the total criminal rate's p-value is 57.7% which is not statistically significant.

This OLS reveals a positive relationship between existing enrollment and the freshman international students' enrollment which matches my expectation and Mazzarol and Soutar's finding, the social linking among international students' contribute a large portion in the decision-making process.(Mazzarol & Soutar, 2002) Moreover, it also put evidence for Shanka, Quintal and Taylor's finding, international students are likely to choose institution based on the familiarity. (Shanka et al., 2006)2006) my regression reveal that each existing international students in the institution will attract 0.91 freshman international students to enroll in that institution. We can state that people really concerned about how many existing population of international students in the university and this will be a big attraction for students who going to choose their destination of their four year college. The reason of this finding might be that international students, with anxious, tend to go into familiar people in foreign and strange countries. (Shanka et al., 2006) Also, at the same time, people love to find similarity in a strange place and be surrounded by people who share similar background.

A positive relationship is found between urbanization dummy and freshman international students' enrollment. The coefficient is large as well. The results reveal that if the school is located in city, it will attract 37.45 more freshman international students. It is not surprisingly to see this result and it confirm my prediction as well. Galster and Killen argue about the numerous opportunities in metropolitan areas and the benefits bring to people who live in metropolitan areas. (Galster & Killen, 1995) Plus, the fact that public transportation are more convenient for

international students when they first visit United States. The resources, a city could provide to the students during their 4-year college life, are greater than it in other areas. Compared to other environmental factor in this study, the urbanization dummy heavily affected the decision-making process for international students. In other words, international students will put attention on the institution's demographic location while they make their final college decision.

In terms of safety factors, total criminal rate and property criminal rate play a negative impact on freshman international students' enrollment. However, the violent criminal rate play a positive impact which contradict to my hypothesis. Except this contradiction, they are not statistically significant. Hence, my data cannot conclude the correct relationship between safety factor and the freshman international students" enrollment in Model 3.

From above, it is unsurprisingly that freshman international students' would like to choose college where there is an existing population of international students. As this being said, it will increase the probability of enrolling in particular institution if there are a great percentage of international students. At the same time, if students known any people in the institution, the probability of enrolling will increase.(Mazzarol & Soutar, 2002; Shanka et al., 2006)

More importantly, international students tend to attend institution where is located in city area. City area normally has a well-build transportation system and could easily connected international students.

Model (4)

With first glance, it is, it is obviously that more data has been explained as the R^2 increased to 70.58%, compared with Model 1's 52.32% and Model 2's 50.42%. Compared model 4 with previous 4 models, all the sign remain the same. In other words, the data has explained the model similarly. Moreover, it is also a signal that the result is less biased and some old result does

not hold their statistical significance. In Model 4, financial aid, rank, lac dummy and existing enrollment, property crime rate are statistically significant. All the cost-related factors are not statistically significant as well as the alternative tuition plan dummy. The graduation rate remain non-statistically significant. Student-to-faculty ratio, violent crime rate and urbanization dummy turned from statistically significant to not statistically significant.

The financial aid remain a positive relationship between freshman international students from model 1 1.2 till model 4. The undeniable attraction that financial aid will have to freshman international students is revealed by all these three results.

The U.S. News ranking still remains negative in Model 4 and still contradicts to my hypothesis earlier. The reason might be that people care less about the school's ranking. Also as my data are students number already enrolled in the institution, students may more consider about the on-campus facilities and academic support could provide by institution in their 4-years life.

The LAC dummy is also statistically significant and it is a variables that to distinguish the university and Liberal Art College. But it still shows that students may have a tendency of choosing university instead of Liberal Arts College.

Although the magnitude of coefficient is smaller than its in model 3, the existing population of international students are positive as well. It re-demonstrate the importance of existing population to international students.

In model 4, the property crime rate remain statistically significant but the violent crime rate altered to not statistically significant. With increased one percentage in property criminal rate, the freshman international students' enrollment will drop by 0.0032 percent. This is the only safety factor that matches my prediction while I merged all the variables in one model.

For the other factors that are not statistically significant, the alternative tuition plan remain

a positive relationship. However, the cost factors cannot do not illustrate their correlation with international students' enrollment. The students-to-faculty ratio is still positively related and as well as the urbanization dummy.

From all these models, my paper does not support that students' are money sensitive and cost will be an important factor to enrollment rate. Plus, my cost-related result are not statistically significant, either. However, the highlight of my finding is that both models contains financial aid reveal the positive relationship between it and enrollment. Financial aid will be an effective tool to attract international students. My paper Re-emphasis the importance of financial aid from previous literatures. (Braunstein et al., 1999; Dynarski, 2000; Van der Klaauw, 2002b) Also the alternative tuition plan will be an attraction for international students as well. From these I conclude that any forms of financial support and help will be an effective instrument for college to attract more international students.

Another highlight of my paper is that we found that ranking is less important. There is a likelihood that people who already enter the school care less about the institutions' ranking. As they already in the institution, they care more about the quality and services that school can provide to them. This is also the reason why in model 2, the student-to-faculty ratio is positively related and has a large coefficient (16) on the result table. (Table 1.0)

In terms of environmental factors, my paper provides more evidence to the fact that international students tend to choose institutions where are more diversity and more existing population of international students. (Mazzarol & Soutar, 2002; Shanka et al., 2006) International students really concern about the diversity on campus and tend to choose institutions where there

are more international students. Due to the fact the people tend to live close with their friends and relatives. They will feel more familiar and also is easier for them to assimilate into the new environment. Also Shanka's paper state that international students have an intention to choose school closer to their friends, also in Mazzarol's paper, he argues the importance of existing population for international students.

More importantly, my paper reveal the importance and concern of the location. International students would like to attend institution in city area the potential reason are the convenience of transportation and life connivance. Also, due to the fact, international students need to take flight into United States, most of the cities do have airport. Moreover, the diversity in city area is also higher than rural place due to the fact of more population. Public transportations are well-developed in city areas and also the infrastructures are better. More importantly, future career opportunities are higher than other areas.

Many of my results are emphasis and provide additional evidence to existing results. For example, the financial aid is playing a positive impact on international students' enrollment which is similar to the result from existing literature.(Bowers & Pugh, 1972; Branco Oliveira & Soares, 2016; Braunstein et al., 1999; Van der Klaauw, 2002b)

At the same point, there are many implement could take for admission officer to attract more international students and strengthen school's advantage on the global market. Any form of financial support will be an effective instrument for admission officers to utilize. Admission officers might also use the advantage of student-to-faculty ratio and other on campus resources to obtain more attention from international students. And help them win the battle with other higher education institutions.

Hence, admission officer and counselor would use the diversity on campus and existing

population of international students as market strategy to get attention. More attractively, they could use a personal story of international students to interest potential students. Additionally, if the institution is located in city area or near city, it will be an effective approach to state the location and promote their geographic advantage to international students.

Limitation and Future Approach

In terms of variables that I used in this research, there are many limitations of the data set.

In the academic reputation, I contained the ranking, the student-faculty ratio and graduation rate. However, U.S news ranking may not be a good fit for academic factors. First, it narrows the available observations in my data set from 7000 institutions to 300 institutions as I used national ranking as a ranking reference. Hence, the less data can be analyzed and less generalized result can be conducted from regression model. Besides, some schools did not participate in U.S News National ranking, and some schools ranked among the top in regional rankings, not in the national ranking system. Additionally, there are institutions that have lower overall ranking but higher rank in certain major filed. For example, University of Texas at Austin's national ranking is 56 but its business major rank top 5 in United States. Also University of South Carolina rank the first in international business, but its national ranking is 103. (U.S. News, 2018)

Moreover, U.S News is not the only ranking publisher among United States. There are still other commercial school rankings. For instance, Forbes national ranking, Maclean’s and, The Times (Dill& Soo, 2005)

More importantly, ranking is only one aspect to evaluate the academic level of institutions. It cannot fully represent the level of the school's culture and education. The school ranking can only explain one aspect of the school's educational strength. Teaching quality and

educational resources are a multi-dimensional and multi-level evaluation. Dill and Soo demonstrate that academic quality can be explained in two sides. One is from the academic behavior of students and the other is from faculty's research. (Dill & Soo, 2005)Thus, we need more aspects to evaluate an institutions academic quality. Ranking, student-to-faculty ratio and graduation rate can reveal partial stories about their relationship with international students' enrollment but they cannot reveal the whole story of college decision process for international students in terms of academic perspective.

In the cost determinant, as I mentioned in previous section that different household have different economic situations and wealthy levels. Moreover, international students' spend more when they start their college year, compared with local students. In addition, they have to calculate the travelling expenses and visa expenses. However, the total expenditure I have in my data set is an average amount of expenditure based on out-of-state students from each institutions' report. This average amount is a combination of local students and international student that cannot separated. Therefore, with this limitation of data, the result can present a part of international students but it cannot tell the full image of international student. Besides, these cost components are collected from all students, thus they may not be a good indicator of cost. Hence, this might be the reason that the relationship between enrollment and cost is positive.

In my paper, I used the data which is generalized based on each school's reports and surveys from United States. This could elaborate how external factors have an impact on international students" enrollment generally. The limitation of data restricts my research here.

In the future, there are multiple way to expand my work. First, people could use individual data set instead of generalized data set for a simple reason that decision-making process involves self-preference. My paper only look at the external factors but not the combination of internal and

external. Researchers could also track individuals' origins and their family wealthy to demonstrate more about the cost-related factors. The culture background is worth to analyze because different culture influence has a long-lasting for people and it can sharp different perspective and thinking process for people. As this been said, researchers should look on the different countries and more specifically, they could also look on individual's family situation and their awareness of education.

In terms of the data format, my data set is cross section data set which is same to all existing researches.(Chen, 2016; Hübner, 2012; Kallio, 1995b; Lambert & Jiang, 2006; Rubin, 2011; Van der Klaauw, 2002b) Later, researchers can merge a panel data set to demonstrate the time differences within one initiation. Panel data set will allow people to control the variables that changes on a time bases but not across entities and it will have more degree of freedom and make the result more efficient. Moreover, it is better for future researchers to distinguish local students' and international students' expenditures. Thus, the result will be more meaningful.

Conclusion

Universities and colleges are under considerable pressure to recruit international students with different background and concerns. At the same time, the undeniable economic effect brought by international students leads me to consider the college decision–making process of international students. This study determines the weighted impact of external factors that international students will consider while they are making their American college decision.

International students tend to see their studies as a learning interaction with their professors. This study finds that international students have an intention to attend institution with high student-to-faculty ratio. The higher the ratio, the easier for students to reach out and connect with their professors.

As pursuing higher education in foreign country is higher risk and higher cost, financial support in any form will boost the students' interest of enrolling in the institution immediately. The financial aid and alternative tuition plan are examples of this model. International students will also be attracted by other financial help that college or universities would provide to them. Furthermore, international students also love to be surrounded by international students or in an area with excessive diversity. Also, a safety place with low property crime rate will be a desired choice for international students. More importantly, a city-located institution is more attractive than non-city-located institution for international students. Although, this study does not provide support for previous studies that freshman are money sensitive, the results of expenditure are not statistically significant either.

In conclusion, this study demonstrate the results of a multivariate analysis of external factors influencing the decision-making process for international students in academic year 2016-2017. The finding suggests that international students put their consideration more on student-to-faculty ratio, financial support from institutions and existing population of international students.

Thus, for universities' and colleges' admission officers, this study will be a good reference for them to promote their colleges to their potential international students and to do so to the international students' favor. Freshman international students' enrollment is more heavily affected by the student-to-faculty ratio, financial aid and existing population of international students. Enrollment is less affected by cost and safety components from my result. It is imperative for universities and colleges to show their strengths to international students in order to compete on the global market. It is crucial for admission officers to promote their college's

financial support for international students and their diversity on campus. Equally important, the student-to-faculty ratio contributes to the decision–making process for international students.

References

Abraham, K. G., & Clark, M. A. (2006). Financial aid and students' college decisions evidence from the District of Columbia tuition assistance grant program. *Journal of Human Resources, 41*(3), 578-610.

Bowers, T. A., & Pugh, R. C. (1972). A comparison of factors underlying college choice by students and parents.

Branco Oliveira, D., & Soares, A. M. (2016). Studying abroad: Developing a model for the decision process of international students. *Journal of Higher Education Policy and Management, 38*(2), 126-139.

Braunstein, A., McGrath, M., & Pescatrice, D. (1999). Measuring the impact of income and financial aid offers on college enrollment decisions. *Research in Higher Education, 40*(3), 247-259.

Chen, S. (2016). College costs, freshman enrollment, and student quality: Evidence from an urban state university. *International Journal of Information and Education Technology, 6*(9), 664.

Coston, C. (2004). Worries about crime among foreign students studying in the united states. *Victimizing Vulnerable Groups: Images of Uniquely High-Risk Crime Targets,* , 173-193.

Dill, D. D., & Soo, M. (2005). Academic quality, league tables, and public policy: A cross-national analysis of university ranking systems. *Higher Education, 49*(4), 495-533.

Dolan, R. C., Jung Jr, C. R., & Schmidt, R. M. (1985). Evaluating educational inputs in undergraduate education. *The Review of Economics and Statistics,* , 514-520.

Dynarski, S. (2000). Hope for whom? financial aid for the middle class and its impact on college attendance. *National Bureau of Economic Research.,*

Frenette, M. (2005). The impact of tuition fees on university access: Evidence from a large-scale price deregulation in professional programs. *The Impact of Tuition Fees on University Access: Evidence from a Large-Scale Price Deregulation in Professional Programs,*

Galster, G. C., & Killen, S. P. (1995). The geography of metropolitan opportunity: A reconnaissance and conceptual framework. *Housing Policy Debate, 6*(1), 7-43.

Griffith, A., & Rask, K. (2007). The influence of the US news and world report collegiate rankings on the matriculation decision of high-ability students: 1995–2004. *Economics of Education Review, 26*(2), 244-255.

Heller, D. E. (1999). The effects of tuition and state financial aid on public college enrollment. *The Review of Higher Education, 23*(1), 65-89.

Hoenack, S. A., & Weiler, W. C. (1975). Cost-related tuition policies and university enrollments. *Journal of Human Resources,* , 332-360.

Hübner, M. (2012). Do tuition fees affect enrollment behavior? evidence from a 'natural experiment'in germany. *Economics of Education Review, 31*(6), 949-960.

Kallio, R. E. (1995a). Factors influencing the college choice decisions of graduate students. *Research in Higher Education, 36*(1), 109-124.

Lambert, E. G., & Jiang, S. (2006). A comparison of chinese and US college students' crime and crime control views. *Asian Journal of Criminology, 1*(1), 37-49.

Maringe, F., & Carter, S. (2007). International students' motivations for studying in UK HE: Insights into the choice and decision making of african students. *International Journal of Educational Management, 21*(6), 459-475.

Mazzarol, T., & Soutar, G. N. (2002). "Push-pull" factors influencing international student destination choice. *International Journal of Educational Management, 16*(2), 82-90.

Oliveira, D. B., & Soares, A. M. (2016). Studying abroad: Developing a model for the decision process of international students. *Journal of Higher Education Policy and Management, 38*(2), 126-139. //www.tandfonline.com/loi/cjhe20 Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=eoh&AN=1566914&site=ehost-live http://www.tandfonline.com/loi/cjhe20

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students* Jossey-Bass San Francisco.

Perna, L. W. (2000). Differences in the decision to attend college among african americans, hispanics, and whites. *The Journal of Higher Education, 71*(2), 117-141.

Rubin, R. B. (2011). The pell and the poor: A regression-discontinuity analysis of on-time college enrollment. *Research in Higher Education, 52*(7), 675-692.

Shanka, T., Quintal, V., & Taylor, R. (2006). Factors influencing international students' choice of an education destination–A correspondence analysis. *Journal of Marketing for Higher Education, 15*(2), 31-46.

Sim�es, C., & Soares, A. M. (2010). Applying to higher education: Information sources and choice factors. *Studies in Higher Education, 35*(4), 371-389.

Stager, D. A. (1989). *Focus on fees. alternative policies for university tuition fees.* ERIC.

Stange, K. M. (2012). An empirical investigation of the option value of college enrollment. *American Economic Journal: Applied Economics, 4*(1), 49-84.

Van der Klaauw, W. (2002a). Estimating the effect of financial aid offers on college enrollment: A regression–discontinuity approach. *International Economic Review, 43*(4), 1249-1287.

Van der Klaauw, W. (2002b). Estimating the effect of financial aid offers on college enrollment: A regression–discontinuity approach. *International Economic Review, 43*(4), 1249-1287.

Variable	Obs	Mean	Std. Dev.	Min	Max
EnrollInt	297	106.9865	192.8062	0	1542
ExistEnro~15	297	82.20875	173.4107	0	1274
FinacialAi~m	296	1256.105	1361.136	35	6367
GradRate	297	74.7138	13.35112	27	98
AlterTuiPl~y	297	1.053872	0.226146	1	2
StutoFacul~o	297	12.28956	4.108782	3	30
TotalCrimi~e	289	3075.846	710.81	2029.17	4986.45
VioCrim	297	380.4717	147.3087	123.8	1205.9
PropCrim	297	2272.03	624.6637	1512.9	4802.9
Rank	297	89.43771	55.01348	1	199
LACdummylI~y	297	0.501684	0.500841	0	1
DegreeUrba~n	297	3.215488	0.881891	1	4
lnenroll	272	3.783877	1.495249	0	7.340836
lnexp	296	10.88008	0.229288	9.801455	11.19433
lnboarding	296	9.363152	0.197379	8.686936	9.774404
lnotherc	296	7.675325	0.509901	6.186209	8.987197
lntui	296	10.2907	0.640995	8.528133	10.89022
lnboks	294	7.011177	0.317273	3.912023	8.183118

Descriptive statistics

Results table

	Model(1)	Model(1.2)	Model(2)	Model(3)	Model(4)
Dependent	ln Enroll	ln Enroll	Enroll	Enroll	ln Enroll
lnexp	3.27*** (0.30)				
FinacialAid~m	0.0008*** (0.00005)	0.0008*** (0.00007)			0.00032*** (0.000078)
AlterTuiPla~y	0.84*** (0.31)	0.75** (0.31)			0.13 (0.25)
lnboarding		2.36*** (0.42)			0.32 (0.37)
lnotherc		-0.10 (0.16)			-0.20 (0.13)
lntui		0.60*** (0.18)			0.10 (0.17)
lnboks		0.11 (0.22)			0.011 (0.17)
Rank			-1.76*** (0.33)		-0.012*** (0.002)
StutoFaculR~o			16.79*** (2.89)		0.019 (0.02)
GradRate			-0.07 (1.31)		-0.004 (0.0077)
LACdummylIb~y			- 109.21*** (21.26)		-1.08*** (0.15)
ExistEnroll15				0.91*** (0.04)	0.0018*** (0.0004)
TotalCrimin~e				-0.0099 (0.02)	
VioCrim				0.18** (0.07)	0.00076 (0.0005)
PropCrim				-0.04* (0.02)	- 0.00032*** (0.00011)
Urbanlizati~y				37.44*** (12.33)	0.11 (0.11)
R^2	0.52	0.50	0.36	0.73	0.72
Constant	-33.68*** (3.41)	-26.41*** (3.72)	118.39 (130.83)	77.01*** (28.68)	2.42 (3.59)

(Table 1.0)

*** significant at 1% level, ** significant at 5% level, * significant at 10% level

	Model(1)	Model(1.2)	Model(2)	Model(3)	Model(4)
VIF					
lnexp	1.2				
FinacialAid~m	1.17	2.59			4.86
AlterTuiPla~y	1.08	1.09			1.16
lnboarding		1.58			2.05
lnotherc		1.50			1.76
lntui		3.47			4.94
lnboks		1.13			1.21
Rank			4.02		4.45
StutoFaculR~o			1.73		4.11
GradRate			3.74		4.04
LACdummylIb~y			1.39		2.40
ExistEnroll15				1.07	1.69
TotalCrimin~e				4.45	-
VioCrim				1.43	1.88
PropCrim				3.95	1.97
Urbanlizati~y				1.07	1.32

VIF Table 2.0

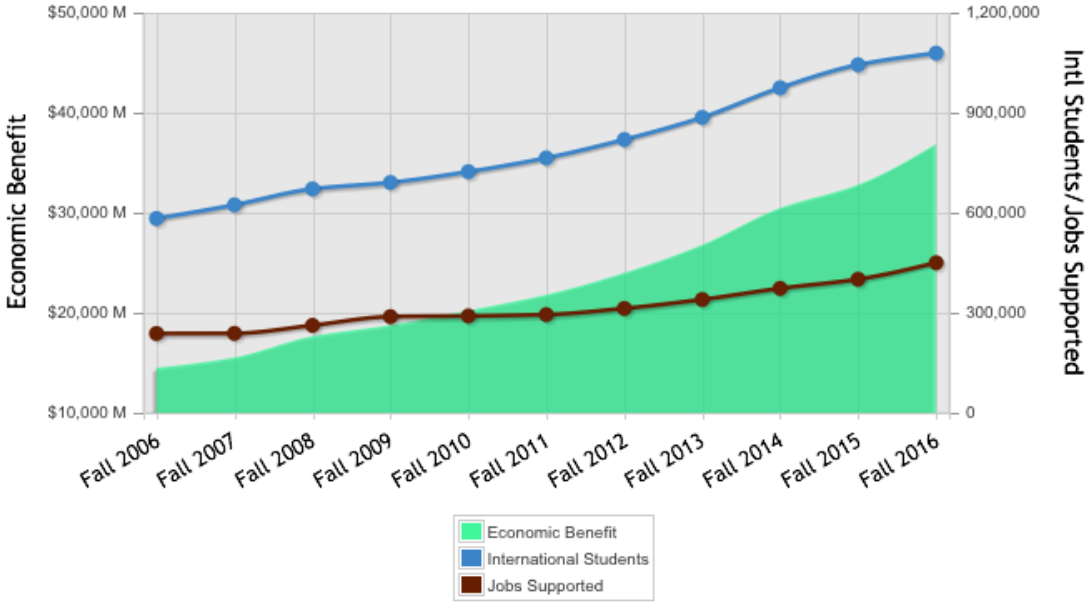
$50,000 M
$40,000 M
$30,000 M
$20,000 M
$10,000 M
Economic Benefit
1,200,000
900,000
600,000
300,000
0
Intl Students/Jobs Supported
Fall 2006
Fall 2007
Fall 2008
Fall 2009
Fall 2010
Fall 2011
Fall 2012
Fall 2013
Fall 2014
Fall 2015
Fall 2016
Economic Benefit
International Students
Jobs Supported

Figure 1.1