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THE RELATIONSHIP BEETWEEN RATE OF STUDENTS ABROAD AND RATE OF GDP/CAPITA GROWTH IN UNITED STATES AND CHINA

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ABSTRACT

After 2000s, China and the United States have experienced the significant growth in the GDP per capita. During this period, millions of Chinese and US students have chosen to study in different countries to obtain higher education. This has led to the improvement of the human capital of each country, which then effected the GDP growth. This paper uses data from 2000 to 2014. Within these 15 years, the rate of number of US students study abroad generally kept increasing in the same direction of GDP per capita. In contrast, the rate of student studying abroad and GDP/Capita in China much less correlates to each other. The purpose of the study is to explain the relationship between the rate of students overseas and rate of GDP/capita Growth in the United States and China.

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Chapter 1

Introduction

Since the beginning of the 21st century, globalization has led to the huge economic growth and changes happening in all other fields. Because of the free market and world trade, the global GDP and GDP/Capita keep increasing in the new era. Since the majority of families are wealthier than in the past, more students can afford to study abroad and obtain foreign experience. The improvement of economic level also encourages people to pursue the higher education (in this paper, it is defined as the education studying abroad).

On the other hand, people who earn higher degrees in foreign countries are equipped with better skills, and contribute more to their country. Education abroad, through its influence of human capital, affects economic development and is influenced by the economy simultaneously. Therefore, the analysis of students studying abroad is necessary in explaining the economic performance.

This paper studies how the change of student study abroad affects the growth of GDP/Capita in two countries, the United States and China. According to the table of Institute of International Education (2016), Europe is the top host country for American students from 2003 to 2014, which is still first choice at the present. Because of the rapid economic growth in Asia, some of students--- from 6.9% in 2003 to 11.4% in 2014---shift attention to Asian's universities (Institute of International Education, 2016).

In terms of Chinese students' preference, in the survey conducted by Lu, Tian and Li (2014), 4903 Chinese college students were selected to participate in the questionnaire. People

among the sample are assessed by their willing of whether study abroad to pursue higher education and which country to go. The result reveals that 42.5% of students prefer to study at United States; and 17.3% of them are likely to earn the degree in England. In Lu, Tian and Li's paper (2014), factors that influence students' decisions are illustrated. The authors suggest that personal preference, family background, level of unsatisfied education system, regions of foreign countries are all determinants in making choice of studying overseas.

In this paper, Lucas Growth Model would be used to explain the trend of the growth of GDP/Capita and number of student study abroad in United Stated and China, and the data is collected from 2000 to 2014. Since Chinese data does not fit the Lucas Growth Model as U.S does, an additional equation model would be used within Chinese case. To reduce the influence caused by omitted variables, relative elements would be listed out to account for the irregular phenomenon of China. The main purpose of the paper is to clarify the relationship between two growth rates, and figure out diverse factors that affect individual decisions and the change of growth rate.

Chapter 2

Data Background of China and United States from year 2000 to 2014

In this paper, the analysis of the relationship between the growth rate of GDP per capital and the changing rate of student study abroad in two countries would be discussed in United States and China. The data is collected from 2000 to 2014. It is easy to find that the GDP per capital keeps rising these years, simultaneously the number of students studying abroad also increases dramatically, especially China. Since both rates generally rose within the 15 years, their changing rate is more useful for showing the relationship between them.

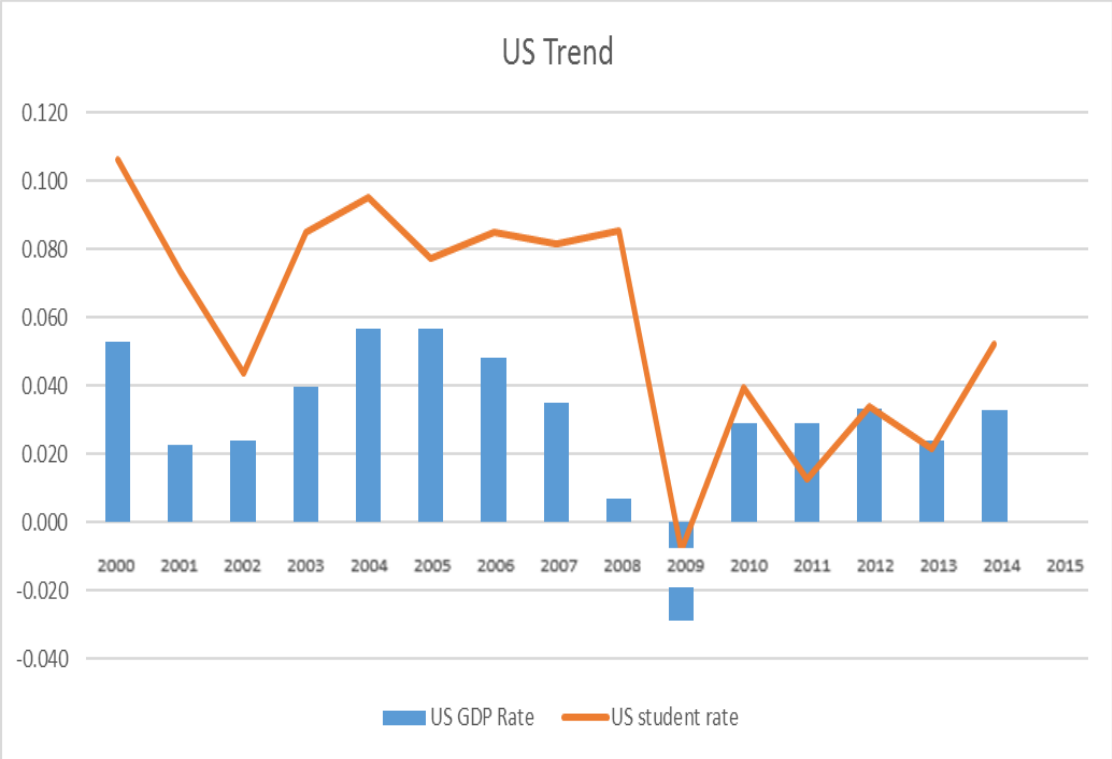
Two variables are used in the analysis: the rate of GDP per capital growth and the changing rate of number of students overseas. The rate of GDP per capital and the rate of student numbers studying abroad share the same equation: $\frac{y_{current} - y_{previous}}{y_{previous}}$.

Table 1. United States: Rate of GDP/Capita changed and Student Overseas from Year 2000 to 2014

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
GDP/Capita	0.053	0.023	0.024	0.04	0.057	0.057	0.048	0.035	0.007	-0.029	0.029	0.029	0.033	0.024	0.033
Students Abroad	0.106	0.074	0.044	0.085	0.095	0.077	0.085	0.082	0.085	-0.008	0.04	0.013	0.034	0.021	0.052

From the table above, we can see that the rate of GDP/Capita and the rate of student number overseas changes in the same direction. It means that when the rate of the GDP/Capita increases, then the changing rate of US students in foreign countries also rises up, otherwise, both values decline. The tendency for two rates changes in the same pattern.

Figure 1. US: The Trend for Rate of GDP/Capita and Number of Students Abroad



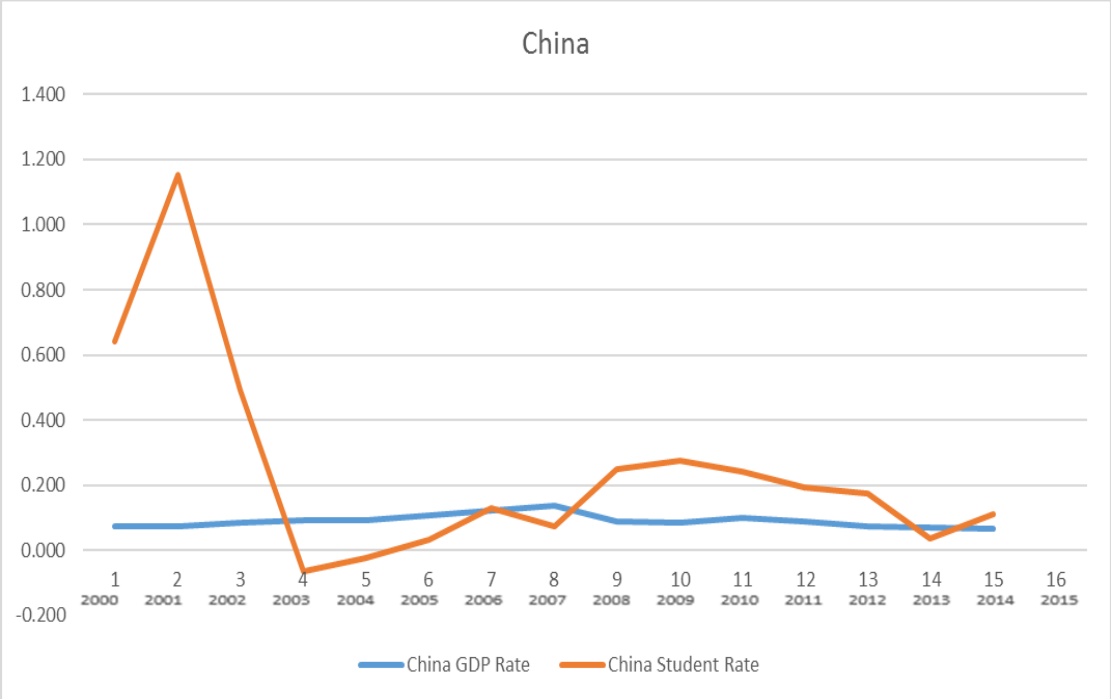
"STATA" is used to calculate the correlation coefficient for two rates, achieving the value is 0.6762. Thus, it could be concluded that there is a strong correlation between the rate of GDP/Capita and rate of student number abroad.

However, Chinese case is different from the America case. The data in table 6 shows that Chinese GDP/Capita keeps raising during the period, while the number of students studying abroad is fluctuating up and down from 2000 to 2014. Thus, it is not easy for us to tell the relationship between two variables directly. Changing rate is better to access how one rate relates to the other.

Table 2. China: Rate of GDP/Capita changed and Student Overseas (2000---2014)

Year	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
GDP/Capita	**0.098**	**0.097**	**0.09**	**0.122**	**0.17**	**0.161**	**0.197**	**0.284**	**0.287**	**0.104**	**0.188**	**0.235**	**0.124**	**0.116**	**0.085**
Students Abroad	**0.642**	**1.154**	**0.491**	**-0.063**	**-0.022**	**0.033**	**0.131**	**0.075**	**0.249**	**0.275**	**0.242**	**0.193**	**0.176**	**0.036**	**0.111**

Figure 2. The Trend for Rate of GDP /Capita and Number of Students Abroad



In "STATA" the value of correlation coefficient is -0.3544, which is negative and close to 0. Compared to U.S value, China has a weak and negative correlation between two changing rates, especially from 2002 to 2004, the data was abnormal during the period, and the general trend of two rates in changes in quite opposite direction.

Based on the data and figures above, it suggests that there is a strong correlation between two growth rates in United States. While Chinese situation is quite different, and their correlation coefficient of the United States and China is 0.6762 and -0.3544 respectively. In the following chapter, I will discuss why Chinese case is different from American case.

Chapter 3

Models for Explaining the Phenomenon of United States and China

As the data result shown in Chapter 2, the values of correlation coefficient between the growth rate of GDP/Capita and the growth rate of number of student study abroad indicate that in US case, these two variable correlate to each other in a positive way (0.6762). However, it is quite different in Chinese case. Within the period, two variables of China correlate in a negative way (-0.3544), which is opposite to the fact of U.S. Therefore, in this chapter, I am going to apply the proper models to analyze the data. Checking that, whether there is a rule behaving in two growth rate, or it is just a coincidence happening in US case. And if it is the regular pattern in growth rate of GDP/Capita and students abroad, what is the reason that the correlation coefficient tells a totally different story?

3.1 Lucas Growth Model for US Case

Lucas Growth Model (1988) would be used to discuss how the two variables correlate with each other. In terms of US case, since it is hard to measure the value of overseas studying experiences in number, it is not likely for us to show how rate of the student study abroad related to the GDP/capita growth rate directly. However, human capital could be considered to be the indicator of students overseas. When students study abroad, they usually achieve the stock of knowledge and skills contributed to the economy, which is defined as human capital. So we could take the human capital as the intermediate while relating rate of GDP/Capita growth to rate of student abroad. In addition, my assumption is that compared to students in home country, those who study abroad are more skilled and have better human capital contributed to economy.

To describe how two variables relates to the other one, the Lucas Growth Model is used to explain the phenomenon. The equation of original Lucas Growth Model,

$$Y = AK^{\alpha}(vhL)^{(1-\alpha)}$$

However, the rate of GDP/Capita and rate of student abroad are discussed in this paper. According to Christopher (2016), Lucas Growth Model could be re-written as the following form,

$$y = Ak^{\alpha}(vhl)^{(1-\alpha)} \qquad (1)$$

Within the formula, y is defined as GDP per capita; k is the value of investment; v is proportion of total labor time spent working; and h is defined as value of human capital. Since the

relationship is accessed between the growth rate of GDP per capital and the rate of student study abroad, then take the derivative of y, get $\hat{y}=\frac{dy}{dt}$. So to explain the relationship between $\hat{y}$ and h, other variables in the formula of y would be held constant, not disturbing the value of y when h changes. Thus, the expression of h is,

$$\dot{h}=h((1-i)P_1+i(1-\lambda)P_2)$$

Therefore, the equation of y with respect to h is,

$$y = Ak^{\alpha}[vl*((1-i)P_1+i(1-\lambda)P_2)]^{(1-\alpha)} \qquad (2)$$

In expression of h, the value of $\dot{h}$ depends on 4 variables: i is the rate of students that study abroad; P_1 is the productivity of students receiving their education domestically; P_2 stands for the productivity of students receiving their education abroad; and λ represents the probability of students to stay abroad after their graduation (not back home). Thus if i is set to be zero, which means that there is no students studying abroad, then $\dot{h} = h(P_1)$. Furthermore, based on the previous assumption, it has already known that: $P_2 > P_1$.

With regard to the America case, three variables P_1, P_2 and λ are assumed to be stable within the equation of $\dot{h}$ (equation 2). So while looking at the how the rate of student study abroad reflects human capital, the formula of h with respect with i,

$$\dot{h}=h(\rho_1 + i((1-\lambda)\rho_2 - \rho_1)) \quad (3)$$

Since all other variables are constant, the result of comparative statics indicates that when i increases, $\dot{h}$ also increases, vice versa. And goes back to the equation (1), human capital (h) has a positive effect on the growth rate of GDP/Capita (y). It means that in the United States, when the rate of student study abroad increases, the rate of GDP/Capita also grows up. Thus, the conclusion reveals that the rate of student abroad has a positive effect on the growth rate of GDP/Capita, which is consistent to the consequence got from STATA---the two rates has a strong correlation to each other, which the coefficient value is 0.6762.

3.2 Another model equation to explain Chinese case

However, when goes to the Chinese case, it is totally different from US. It is found that even though the rate of Chinese students goes down, the rate of Chinese GDP/capita still increases, or more students abroad but less GDP/capita grows. Moreover, the correlation coefficient of two growth rate is -0.3544, which is opposite to result of US's. The reason why Chinese case cannot be explained in Lucas Growth Model directly as the U.S does, is that $\boldsymbol{\lambda}$ (probability of students staying abroad after graduate) is not constant in formula (3) anymore. Though $\boldsymbol{\lambda}$, which is almost stable in U.S case, it fluctuates in Chinese case. According to the research by Lu, Tian and Li (2014), about 40% Chinese students prefer to study in U.S, and the United of Kingdom is the second favorable destination for most of them. Thus, the equation of $\boldsymbol{\lambda}$ is written as,

$$\boldsymbol{\lambda} = \boldsymbol{\Phi}\,(A^{\alpha} + E^{r} + (F_{-A-E})^{\delta} - H^{\beta})$$

Thus, the equation of human capital is,

$$\dot{h} = h\{(1 - i)\,Þ_1 + i\,[1 - \boldsymbol{\Phi}\,(A^{\alpha} + E^{r} + (F_{-A-E})^{\delta} - H^{\beta})]\,Þ_2)\} \qquad (4)$$

Within the equation of $\boldsymbol{\lambda}$ (the probability of students to stay in host countries with foreign degrees), A is the percentage of students stay in US after graduation; E stands for the percentage of students stay in United of Kingdom after graduation; F_{-A-E} is the proportion of graduate students choose to stay in the rest foreign countries, except US and England; H represents the percentage of students choose to go back home while earning the degrees.

As can be seen from equation (4), the change of ħ is not only affected by i (rate of student study abroad). The variables in equation of $\boldsymbol{\lambda}$ influence students' decisions of returning back home country or not after graduation. Though $\boldsymbol{\lambda}$ is constant in U.S. case, it is changeable within Chinese case. Since $\boldsymbol{\lambda}$ is affected by the foreign factors, the factors also determine the change of human capital. Thus, it is the $\boldsymbol{\lambda}$ (or we can say the variables in $\boldsymbol{\lambda}$ equation) that makes the pattern of two rates of China so different from that of US. In the next chapter, the factors that make Chinese students not go back home after graduating from U.S. and British colleges will be discussed. And we would see how those factors affect Chinese students' preference, then whether the human capital increases or decreases, and eventually how rate of GDP/Capita changes in Chinese case.

Chapter 4

Factors That Influences Chinese Students' Choice after Graduate

4.1 Factors in Foreign Countries

As discussed above, variable $\boldsymbol{\lambda}$ is changeable in Chinese case during the fifteen years, which makes Lucas Growth Model not applicable for it. Shayleen (2016) has built a time-series model to check the factors on Chinese returning back home after obtaining the degrees in U.S, including 25 observations (from 1978 to 2013). According to Shayleen's study (2016), the external factors that affect Chinese students' choice of returning back home or staying in US after graduating, are called "Push and Pull". Within the study, U.S unemployment rate is a factor that pushes Chinese students to go back home after graduation. The change of unemployment rate of U.S influences not only the enrollment of Chinese students but also their return rate. Since U.S experienced economic decline in the early 2000s, the return rate for Chinese student rose dramatically simultaneously, especially after the subprime crisis at 2008. The study investigates that about 1% increase of college graduate unemployment rate in U.S would lead to 0.8% increase in Chinese returnees (Shayleen, 2016).

In terms of "pull" factors, the study focuses on China's attitude to technology and the market---"the expenditure on research and development, high-technology exports and the Index of Economic Freedom" (Shayleen, 2016). The database indicates that the more investment in scientific research and development, the more students with higher degree overseas would return (Chou & Ehui, 2016). The result of Shayleen's paper (2016) reveals that 1% more investment in research and development, 3% more Chinese students choose to go back home. On the other

hand, the growth of high-technology exports works in the same way. The increase of technological exports would create more jobs in the market. Thus, students are attracted to go back to China as they think they would have more opportunities to pursue their career in China rather than in U.S. The research (Shayleen, 2016) finds that 1% increase of technological exports leads to additional 1.12% students returning home country. Looking through the history, Chinese economic market was comparatively not open to the world before 2000s (Chou & Ehui, 2016). Since China entered WTO in 2001, the level of Chinese index of Economic freedom rapidly increased (Feng, 2005). According to Shayleen's paper (2016), China has eliminated the lag with world's average index since 2007 and remained steady since then. Because of the free market and economic growth, students with foreign experience are motivated to return to home country. Data from the National Bureau of Labor Statistics of China (2015) indicates that the return rate has increased by 22% per year since 2001. Furthermore, every 1% increase of index value would cause to 7% more students working in China after earning the U.S degree (Shayleen, 2016).

All the mentioned factors--- U.S unemployment rate, China's investment in technology research, its export and the index of Chinese market's freedom--- are variables in Shayleen's model. The result of Shayleen's model (2016) shows that the r-squared is 0.9701, which indicates that "97% of the variation in students' decisions to return to China after graduating from American colleges". Whenever students choose to return to China, $\boldsymbol{\lambda}$ (probability of Chinese students staying in host country) decreases. While the number or the rate of growth of student abroad may not decrease, so how y, the rate of GDP/Capita changes would depend on the strength of i and $\boldsymbol{\lambda}$.

In spite of the factors in study, the decisions of whether Chinese students go back home or stay at host counties with foreign degrees also depend on relative policies. Since more than 40%

Chinese students prefer to study in America (and the number is raising every year), the political environment and policies for international students significantly affect Chinese students (Lu, Tian & Li, 2014). The U.S Migration Policy Institute (MPI) reports that compared to the amount of F-1 visas, very few of H-1B would be issued to Chinese students (Jeanne & Jie, 2016). This indicates the situation that the demand of work permits is much higher than the supply. Therefore, it is not easy for Chinese students to stay in U.S when they graduate from the colleges or universities. However, after the terrorist attack "9-11" in 2001, U.S government legislated stricter policies on international students. To protect U.S border security, less F-1 student visa and H-1B work permits were issued after the attack (David & Carol, 2005). Besides the unstable political environment in U.S, the economic crisis since 2007 intensified the worse situation for foreign students who wanted to work in U.S after graduate (Chou & Ehui, 2016). Since it is very difficult to get a job offer in U.S, Chinese students have to return back home to find a job. A similar visa policy in England---Post-Study Work (PSW), which was canceled in 2012. Since then international students in British are forced to pursue a job at home when they get the degrees. The strict visa policies in foreign countries stimulate Chinese students to work in China. On the contrary, the issue of PSW by British government in 2008 encouraged students to work in England and not go back China after graduate.

4.2 Factors in Domestic Country

In spite of the external factors in foreign countries, the economic environment and policies in domestic country also influence students' decisions significantly. According to the report by Chou and EHui (2016), the rate of Chinese students abroad returning back China after graduation experienced four periods after the Reform and Open strategy. The first stage was late 1970s to early 1980s, students at that time were sent overseas by government, thus return rate was almost 100%; then the second and third period was 1980s to middle 1980s and to 1990s, students studied overseas funded by their parents, so more students chose to study abroad and 70% of students not come back home with higher degrees. During the second and third period, China suffered a serious problem "brain drain". The loss of human capital would affect the growth of economy eventually (Shao & Wu, 2014).

Figure 3. The Return Rate of Chinese students abroad from year 1978 to 2012

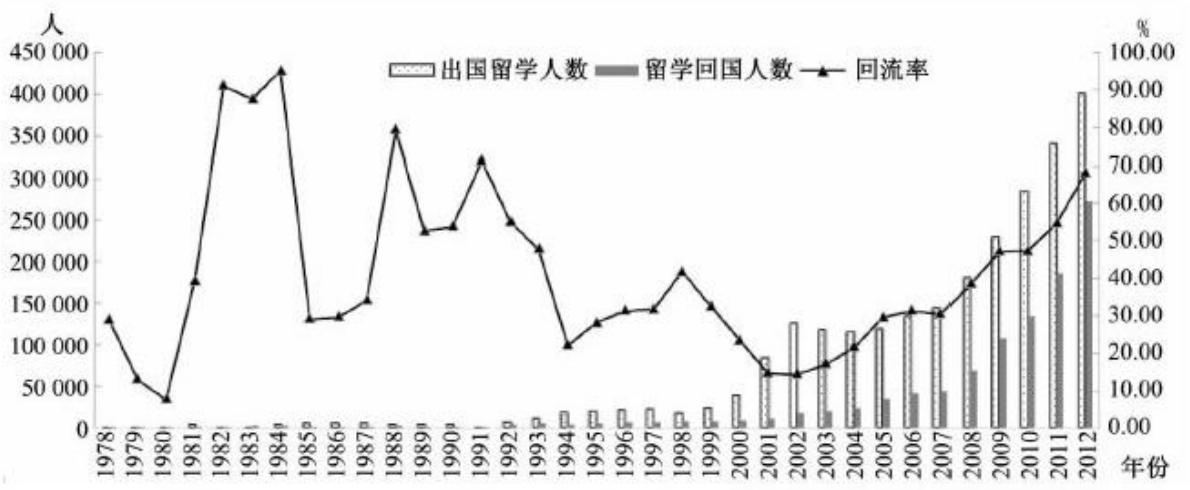


图 1　1978~2012 年中国出国留学人数与留学回国人数对比及回流率

数据来源：中国国家统计局。

(resource: National Bureau of Statistics of the People's Republic of China)

Note: the left y-axis is the number of students, and the right y-axis is the percentage; the white bar represents the number of Chinese students abroad; the dark bar stands for the number of returnees; and the curve in the graph shows the return rate

However, the return rate began to increase since 2001. Because of entering the WTO, China starts to open to the global trade, which stimulates national economy to grow and creates more job opportunities in labor market (Chou & Ehui, 2016). Zweig et al. (2006) believed that the return rate of Chinese students would depend on the wage level, government policies, political stability and foreign factors. In addition to the students' confidence on domestic economy market, Chinese government also took actions to encourage students abroad to contribute to the nation after obtaining the foreign degrees. China carries out numerous plans to deal with the problem of "brain drain". For example, "Thousand Talent Plan", "3310 Introducing Talent Plan", "Focus on Talent Abroad Project" and many other similar plans in China are applied to support and attract students abroad to return when they finish study (Thousand Plan, 2015). Furthermore, the government invests more money to support those students. At the end year of 2002, the department of Ministry of Education and Ministry of Finance announced to increase the funding for those who returned with high skill by 44% (Feng, 2005). The government changed the policy of "encouraging to return but with freedom" to the policy of "highly encouraging returners to contribute the country in diverse ways"; at the same time, the government loosed the policy for returners, raising forms of funding, and also providing platforms for them to communicate and exchange information (Feng, 2005). All of these actions incentive students abroad to return with degrees, which leads to the decrease of variable $\boldsymbol{\lambda}$.

According to the report of Overseas Chinese Affairs Office, until 2014, the rate of returnees was around 74.48% (Overseas Chinese Affairs Office, 2015).

In Chinese case, the relationship between the rate of GDP/Capita and rate of students abroad would not change in similar pattern because variable λ plays an important role in the model. Goes back to the expression of the human capital h,

$$\dot{h}=h((1-i)\,P_1+i(1-\lambda)\,P_2)$$

then re-write the equation with respect to λ,

$$\dot{h}=h(P_1-\lambda(iP_2)+i(P_2-P_1)) \qquad (5)$$

When the rate of students abroad i increases, the result of y would be ambiguous. The trend of how y changes depends on both effect of i and λ, and the stronger one would decide the pattern of y. This explains that why two variables in the table 2 and figure 2 not change the same as regular pattern of U.S.

4.3 Psychological Behavior

According to Shao and Wu's paper (2014), students would take some time to react to the external factors. It indicates that there has lag between students' decisions (not only return choice but also the choice of studying abroad) and social environment or policies changes. Generally, the period is about one-year, which is called "psychological behavior"(Shao & Wu, 2014). For example, 9/11 event in 2001 would influence individual decisions significantly in 2002 (David & Carol, 2005). The data in table 2 shows that the rate of Chinese student abroad decreased dramatically from 1.154 in 2001 to 0.491 in 2002. The PSW Visa issued by the British government in 2008 incentives more Chinese students to study abroad, since they thought that it was very likely to find a job after graduate. Because of the loose policy for international students, the growth rate of Chinese students abroad increased from 0.249 to 0.275, for year 2008 and 2009 respectively. However, in year 2012, the British government canceled the PSW Visa, the data in table 2 showed that the rate of Chinese student abroad declined from 0.176 to 0.036. Therefore, it could be found that Chinese students are very sensitive to the external changes when they make the individual decisions. However, there is a time lag before students react to the change.

Chapter 5

Conclusion

Based on the data and models analyzed above, the results prove that there exists relationship between growth rate of GDP/Capita and number of students abroad. In terms of United States, the value of correlation coefficient 0.6762 implies that the rate of student study abroad and GDP/Capita is strong and positive correlated. Furthermore, the similar pattern of two rates indicates that the change of the number of students overseas would lead to the change of the GDP/Capita in the same direction. This could also be explained by the Lucas Growth Model. Holding other variables constant, the equation of human capital (h) with respect to the rate of student study in foreign countries (i) shows that the increase of i leads to the increase of the growth rate of GDP/Capita, and vice versa. The data during the 15 years is consistent to the fact of the model, that is when the rate of student studying abroad increases, the rate of GDP/Capita also increases. Thus, the conclusion got from the Lucas Growth Model tells the same story with the value of correlation coefficient.

Yet the pattern of Chinese rates is not supported by the Lucas Growth Model; the Chinese case is more complicated. The study of Shayleen (2016) suggests that Chinese students are very sensitive to the external factors when they make decisions of studying abroad and returning back home. Therefore, the probability of students returning home after earning the degrees is related to the change of human capital. So, an equation of $\boldsymbol{\lambda}$ is used to explain the irregular phenomenon in China. The new equation considers the circumstances of both host regions and home country. Based on the data and equation assess, it is found that the rate of Chinese GDP/Capita is not simply affected by the rate of student studying abroad. Instead, both

rate of student overseas and rate of students returning home with degrees determine the change of rate of GDP/Capita. That whether students return after graduation is affected by policies for international students in foreign regions, political stability, economic level and policies in home country, cultural background and social environment. Students would prefer to return when they find that it is more likely to pursue their career in China. Thus, how the rate of GDP/Capita changes eventually would depend on the strength of i and $\boldsymbol{\lambda}$. The larger value determines the tendency of pattern. The return rate is more strongly related to the external factors. Therefore, the government in home country could encourage the returnees by enacting effective policies, which alleviates the serious problem of "brain drain" and reduces the loss of economic growth. Moreover, the tendency of GDP/Capita and student study abroad could be forecasted based on the external elements to some extent.

The Lucas Growth Model indicates that human capital relates to the GDP/Capita growth directly. In spite of noise factors, the rate of student abroad is positive and strong correlate to the rate of GDP/Capita, and patterns of two rates are quite similar. Whenever the noise factors have impact on the human capital, the growth of rate of GDP/Capita would depend on the stronger variable.

Appendix

Relative Tables and Figures

Table 3. Host Regions of U.S. Students Study Abroad from year 2003 to 2014

HOST REGIONS OF U.S. STUDY ABROAD STUDENTS, 2003/04 - 2014/15												
U.S. STUDY ABROAD STUDENTS (%)												
Host Region	**2003/04**	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/1**
Africa, Sub-Saharan*	3.0	3.5	3.8	4.2	4.5	5.3	5.5	4.3	4.5	4.6	4.4	3.4
Asia	6.9	8.0	9.3	10.3	11.1	11.4	12.0	11.7	12.4	12.4	11.9	11.4
Europe**	60.9	60.3	58.3	57.4	56.3	54.5	53.5	54.6	53.3	53.3	53.3	54.5
Latin America	15.2	14.4	15.2	15.0	15.3	15.4	15.0	14.6	15.8	15.7	16.2	16.0
Middle East & North Africa*	0.5	1.0	1.2	1.1	1.3	1.4	1.8	2.6	2.5	2.2	2.1	2.2
North America	0.6	0.5	0.5	0.6	0.4	0.5	0.7	0.5	0.6	0.5	0.5	0.5
Oceania	7.4	6.7	6.3	5.7	5.3	5.5	5.0	4.8	4.5	4.0	3.9	4.0
Antarctica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Multiple Destinations	5.5	5.6	5.5	5.6	5.7	6.0	6.5	6.8	6.4	7.3	7.7	7.9
Total	**191,321**	**205,983**	**223,534**	**241,791**	**262,416**	**260,327**	**270,604**	**273,996**	**283,332**	**289,408**	**304,467**	**313,41**

(Resource: Institute of International Education, 2016)

Table 4. Preferred Host Regions by the Sample Population in Lu, Li & Tian 's survey

Choice of host regions	*Frequency*	*Percentage (100%)*
United States	1887	42.5
United Kingdom	766	17.3
Australia	573	12.9
Hong Kong	561	12.6
Singapore	295	6.6
Japan	253	5.7
New Zealand	146	3.3
Macao	129	2.9
South Korea	90	2.0
German	81	1.7
France	54	1.1
Canada	41	0.9
Others	57	1.3
Total	4933	111.2

Note: The percentage is calculated by using the base of sample population 4438.

(Resource: Mei, Tian & Genshu, Lu & Wanhong, Li (2014). “Analysis of Factors Influencing College Students' Intention of Pursuing Postgraduate Study Abroad”.)

Table 5. Number of U.S. Students Studying Abroad

Table 233. Number of U.S. students studying abroad and percentage distribution, by sex, race/ethnicity, academic level, host region, and duration of stay: 1996–97 through 2007–08

Selected characteristic	1996–97	1997–98	1998–99	1999–2000	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08	Change 1997–98 to 2007–08
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Number												Percent change
Total	**99,448**	**113,959**	**129,770**	**143,590**	**154,168**	**160,920**	**174,629**	**191,231**	**205,983**	**223,534**	**241,791**	**262,416**	**130.3**
	Percentage distribution												Change in percentage points
Sex	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	†
Male	35.1	35.2	34.8	35.4	35.0	35.1	35.3	34.4	34.5	34.5	34.9	34.9	-0.3
Female	64.9	64.8	65.2	64.6	65.0	64.9	64.7	65.6	65.5	65.5	65.1	65.1	0.3
Race/ethnicity	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	†
White	83.9	84.5	85.0	83.7	84.3	82.9	83.2	83.7	83.0	83.0	81.9	81.8	-2.7
Black	3.5	3.8	3.3	3.5	3.5	3.5	3.4	3.4	3.5	3.5	3.8	4.0	0.2
Hispanic	5.1	5.5	5.2	5.0	5.4	5.4	5.1	5.0	5.6	5.4	6.0	5.9	0.4
Asian/Pacific Islander	5.0	4.8	4.4	4.8	5.4	5.8	6.0	6.1	6.3	6.3	6.7	6.6	1.8
American Indian/ Alaska Native	0.3	0.6	0.9	0.5	0.5	0.4	0.5	0.5	0.4	0.6	0.5	0.5	-0.1
Two or more races	2.1	0.8	1.2	0.9	0.9	2.0	1.8	1.3	1.2	1.2	1.2	1.2	0.4
Visa students[1]	†	†	†	1.6	†	†	†	†	†	†	†	†	†
Academic level	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	†
Freshman	2.4	2.7	2.5	3.2	3.1	3.2	2.9	3.0	3.1	3.7	3.3	3.5	0.8
Sophomore	12.8	13.4	13.2	13.6	14.0	13.6	11.8	12.0	12.2	12.8	12.9	13.1	-0.3
Junior	41.3	42.2	40.3	39.8	38.9	40.7	38.0	34.7	35.8	34.2	36.6	35.9	-6.3
Senior	18.3	17.7	19.0	17.7	20.0	20.4	20.2	19.3	19.6	19.8	21.3	21.3	3.6
Associate's students	1.9	2.3	2.5	0.9	0.9	1.5	2.1	1.6	2.7	2.7	2.7	2.2	-0.1
Bachelor's unspecified	14.7	13.2	13.3	15.6	13.5	11.0	15.3	16.3	15.2	14.9	12.5	13.4	0.2
Master's level or higher	7.8	8.1	8.2	8.3	8.3	8.7	9.1	8.6	8.9	10.0	10.5	10.5	2.4
Other academic level	0.8	0.5	1.1	1.0	1.1	0.8	0.7	4.2	2.5	1.9	#	0.1	-0.4
Host region	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	†

(Resource: Digest of Education Statistics, 2009)

Table 6. Number of Chinese Students Studying Abroad

1	Year	China GDP/Capita (current US$)	Chinese Student Abroad (10,000)
3	2000	954.552	3.899
4	2001	1047.478	8.397
5	2002	1141.758	12.518
6	2003	1280.603	11.731
7	2004	1498.174	11.468
8	2005	1740.097	11.852
9	2006	2082.183	13.400
10	2007	2673.294	14.400
11	2008	3441.221	17.980
12	2009	3800.475	22.930
13	2010	4514.941	28.470
14	2011	5574.187	33.970
15	2012	6264.644	39.960
16	2013	6991.854	41.390
17	2014	7587.290	45.980

(Resource: National Bureau of Statistics of China, 2015)

Figure 4. STATA: Correlation of Rate of GDP/Capita and Rate of Student Abroad for U.S.

```
Notes:
      1.  Unicode is supported; see help unicode_advice.

running C:\Program Files (x86)\Stata14\profile.do ...

. *(3 variables, 15 observations pasted into data editor)

. corr usstudentrate usgdprate
(obs=15)

             | usstud~e usgdpr~e
-------------+------------------
usstudentr~e |   1.0000
   usgdprate |   0.6762   1.0000


.
```

Figure 5. STATA: Correlation of Rate of GDP/Capita and Rate of Student Abroad for China

```
running C:\Program Files (x86)\Stata14\profile.do ...

. *(3 variables, 15 observations pasted into data editor)

. corr chinastudentrate chinagdprate
(obs=15)

             | chinas~e chinag~e
-------------+------------------
chinastude~e |   1.0000
chinagdprate |  -0.3544   1.0000
```

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