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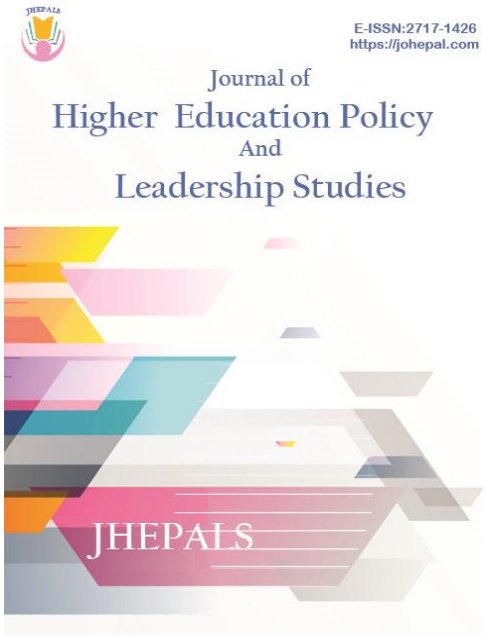

An Economic Analysis of the Demand for Overseas Higher Education with Survey Data from China: Investment or Consumption?

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Abstract

With China's economic development and the internationalization of higher education, more students in China, particularly the younger ones, are choosing to study abroad. This study examines their reasons for choosing international over domestic education and evaluates their preferences using an economic model incorporating human capital and consumption behavior theories. The models evaluate both the long-term benefits and immediate gratifications of studying abroad. A survey data from senior high school students across seven Chinese cities shows that under self-funding, factors including economic returns, consumption values, pricing, and financial constraints significantly drive the intention to study abroad. However, when studies are financed through loans, only the impact of consumption benefits remains significant. This trend underscores a concerning pattern in China, where poor financial decisions related to international education lead to poverty. It is essential to highlight the financial risks and potential consequences associated with excessive investment in overseas education, especially when undertaken without adequate support or careful planning.

Keywords: Consumption; Investment; Overseas Higher Education; HE in China; Cost; Benefit

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Introduction

With the internationalization of higher education, the number of students studying abroad has increased significantly over the past half-century, rising from 2.5 million in 2005 to 6.4 million in 2021 (UNESCO, 2023). China leads in the number of students studying abroad, accounting for 14% of international students worldwide. In 2021, 1.021 million Chinese students were overseas, making up 16% of the international student population and ranking first globally (CCG, 2024). A notable trend is the increasing number of younger students pursuing education abroad. During the 2011-2012 academic year, the number of Chinese undergraduate students in the U.S. grew by 30.8%, compared to a 15.1% increase for graduate students (Institute of International Education, 2013). This trend peaked in the 2019-2020 academic year, with over 10,000 more high school graduates going directly to the U.S. for undergraduate studies than those pursuing graduate degrees (Institute of International Education, 2024). These statistics indicate that high school graduates have become a significant group seeking overseas higher education. China's economic development and open-door policy have expanded educational options for students after high school graduation. This raises questions: Why do Chinese students choose to study abroad instead of domestically? How do they weigh the options between domestic and overseas higher education? What determines their intention to study abroad?

Previous research has highlighted several factors influencing students' behaviors to study abroad. Key considerations include the costs of tuition, living expenses, and financial aid (Soo & Elliott, 2010; Van Der Meid, 2003), the benefits of overseas diplomas in employment markets (Pereda et al., 2007), and the financial constraints of affording education abroad (Pimpa, 2003). King and Ruiz-Gelices (2003) also found that students seek extensive experiences involving travel, leisure, and education beyond traditional economic factors. Altbach (1998) summarized these factors using a push-pull model, categorizing them into push factors from the home country and pull factors from the host country. Push factors include limited opportunities, poor-quality educational facilities, unsuitable academic environments, the high return on foreign degrees compared to domestic ones, the trend of studying abroad and immigration patterns, recommendations from friends and family, and parental pressure. Pull factors include scholarships, favorable policies for international students, high-quality education, a vibrant academic atmosphere, and the allure of new life and cultural experiences in the host country (Rodríguez González et al., 2011; Ahmad & Buchanan, 2016; Ahmad & Hussain, 2017). Psychological factors also play a role, as identified through expectancy theory and motivation theory. Yue (2022) argues that the utility value of studying abroad is framed within the context of achievement value and determined motivation, emphasizing life goals, self-worth, and the desire for new experiences and challenges (Jiani, 2017). The factors influencing the choice to study abroad also differ based on whether the home country is developed or developing. For students from Western and developed countries, personal reasons are more emphasized. In contrast, students from Eastern and developing countries prioritize economic and academic considerations (Kondakci, 2011).

In the 1980s and 1990s, studies revealed that Chinese students seeking overseas education were primarily motivated or constrained by economic factors. As China was still developing, most people faced significant economic constraints and relied heavily on

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financial subsidies to study abroad. Additionally, diplomas from overseas universities were highly valued compared to domestic ones, leading to better job prospects, higher earnings, and faster promotions for those who held them (MOE, 2009; Zweig et al., 2004). Thus, during this period, the choice to study abroad was predominantly influenced by economic considerations rather than the quality or availability of domestic higher education (Huang, 1995). Since the turn of the 21st century, China's rapidly advancing economic conditions have intensified personal motivations for studying abroad. These motivations now include enhancing international social status and pursuing advanced academic and professional development (Li & Bray, 2007). Additionally, there is an increasing emphasis on the quality of life and travel opportunities available during the study abroad experience (Bamber, 2014).

However, with rapid economic growth, circumstances have changed. In 2019, China's Gross National Income (GNI) per capita surpassed USD 10,000, a 147.7-fold increase since 1962, marking its entry into the ranks of upper-middle-income nations. This economic background has led to a significant rise in students choosing to study abroad. Then, questions arise that, compared to earlier times, what drives so many students to pursue overseas higher education? What differences are students considering today?

Our study seeks to provide an economic analysis framework to understand students' desires in choosing to study abroad, moving beyond the push-pull model. We explore investment and consumption as the primary motivations behind this choice. Using data from China's high school students, we establish an investment-consumption model to empirically address three key questions: (1) Are students' demands for overseas higher education driven by investment motivations? (2)Are consumption motivations driving students' demands for overseas higher education? (3) What other factors motivate or constrain students' choice to study abroad?

The Theory and Model

Before the human capital theory was proposed, economists typically viewed educational services as consumer goods to predict the demand for education. They focused on the consumption benefits of education, which drive educational demand. According to T. Schultz, these consumption benefits included the immediate benefits derived from consuming educational services, such as learning and living experiences in college classes or on campus. Schultz (1963, p. 8) stated, "It can be moral, or a refinement in taste, or some other sources of satisfaction. To the extent that schooling is a consumer 'good'". Based on consumer behavior theory, people choose educational services within a specific budget by comparing the prices of educational goods with substitute goods, considering the utilities these services bring, and constrained by their personal preferences to maximize their consumption utility (Chapman, 1981; Moogan et al., 1999). Referring to the model provided by Michael and Becker (1973), we can write a function to predict consumption demands as follows:

$$D_C = d_s(I, P_s, P_G, U_s, T, X_i, \varepsilon_s) \quad (1)$$

In Equation (1), D_C represents the consumption demand for higher education *S. I* denotes individuals' ability to pay, P_s is the price of higher education *S*, and P_G is the price of

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substitute options for *S*. U_s signifies the consumption utilities provided by *S*. *T* represents individual preferences related to *S*. X_i includes other control factors, and ε_s denotes the residual error.

Equation (1) aims to predict the consumption demand for higher education based on the hypothesis of maximizing consumption utility. It considers individuals' ability to pay, the prices of the education services demanded, the prices of substitutes, the consumption benefits provided by the education services, and personal preferences. The consumption benefits of higher education refer to the immediate satisfaction derived from these services as if they were consumer goods. Substitutes are the alternative options people consider when making educational decisions. Generally, the price of a substitute has a positive effect on the demand for a particular higher education service (Hoenack & Weiler, 1979; Bezmen & Depken, 1998; Buss et al., 2004). In other words, people choose higher education services like purchasing other consumer goods, aiming to maximize their utility within their budget constraints. Before the development of the human capital framework, this consumption model was widely used by economists to predict educational demand, leading to a substantial body of empirical evidence (Hoenack, 1967; Radner & Miller, 1970; Campbell & Siegel, 1967; Spies, 1973; Feldman & Hoenack, 1969; Hoenack & Weiler, 1979; Hight, 1975; Knudsen & Servelle, 1978).

With the rise of human capital theory, researchers gained a new understanding of the demand for higher education, recognizing that analyzing education solely as a consumption good was insufficient. In his distinguished book, *The Economic Value of Education*, Schultz (1963, pp. 21-24) wrote:

> The satisfaction people obtain from schooling is the consumption component, but schooling to acquire abilities to increase future earnings is not consumption. Many educational expenditures have the properties of an investment in a producer capacity, and it is not correct to treat this part as consumption. Where schooling increases the future earnings of students, it is an investment. It is an investment in human capital in the form of abilities acquired in school.

Treating expenditures on schooling as economists treat other investments allows for a more comprehensive demand analysis. The idea that education can improve people's productivity and yield high future returns forms the core of human capital theory (Schultz, 1961; Mincer, 1993; Becker, 1993). With this perspective, we can use the rate of return to higher education, or its components, as the basis for predicting demand. This leads us to formulate the investment model function as shown in Equation (2):

$$D_I = d_s\{RoR_s(B_s, C_s), P, T, X_i, \varepsilon_s\} \quad (2)$$

In Equation (2), D_I represents the investment demand for higher education S. RoR_s denotes the rate of return to higher education, calculated by the cost (C_s) and benefit(B_s). It signifies the ability to invest in education. *T* represents individual preferences related to *S*. X_i includes other control factors and ε the residual error. Based on this model, numerous studies have demonstrated that people determine their education choices by considering the cost and return on education (Hung et al., 2000; Menon, 1997; Wong, 1989).

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With the acceptance of human capital theory, the human capital framework has been extensively utilized and has become the mainstream model for explaining the demand for higher education (Freeman, 1971; Alexander & Frey, 1984). However, this focus overlooks the consumption aspect (Blaug, 1976). Predicting the demand for education requires more than one aspect, whether consumption or investment. In effect, at the beginning of the proposed human capital theory, Schultz (1961) emphasized that, education possesses both investment and consumption properties. He classified the value of education into three groups: present consumption, future consumption, and future productivity, with the latter two considered investment values. To comprehensively understand and predict the demand for higher education, it is essential to consider both aspects together to determine the maximum demand.

Our research aims to integrate the consumption and investment models into a unified mixed model. Upon examining the two models, we identified some overlapping variables. For example, both models include price or cost elements, and the ability to pay can be viewed as a constraint in both consumption and investment contexts. The primary difference between the two models lies in their perspectives on the values provided by higher education services: the human capital framework focuses on future benefits, while the consumption framework emphasizes present satisfying utilities. This distinction is significant not only for individual welfare but also for societal economic development. To incorporate both aspects, we construct a mixed model based on the assumption that both consumption and investment values drive the desire to study abroad. The function is presented as follows:

$$D_s = d_s\{I(NB_s), C(P_s, P_G, U_c), H(F, T), \varepsilon_s\} \quad (3)$$

Dependent variable D_s represents mixed demands for overseas higher education S. Independent variables are classified into three groups: (1) Investment factors (I), represented as expected economic return(NB_s); (2) Consumption factors, including expected prices of overseas higher education (P_s), expected prices of substitute goods P_G (represented as prices of domestic higher education), and expected consumption benefits brought by overseas higher education(U_c); (3) Constraint factors, including family background F (family income, family education background and family location), and personal characteristics T (academic capability, gender, race). In addition, ε_s represents residual error.

Data, Variables, and Methods

Data

The data used in this study come from the research project "Pursuing Overseas Higher Education: Choices and Reasons of Mainland Chinese Students" by the Chinese University of Hong Kong conducted in 2007-08. This project selected seven cities in Mainland China, representing different levels of economic development in the eastern, central, and western regions (Beijing, Shanghai, Nanjing, Xi'an, Wuhan, Guiyang, and Shenzhen). In each city, surveys were conducted at 15 schools, covering 12,961 senior high school students.

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The questionnaire gathered information on students' personal and school backgrounds, their plans to study abroad, their estimates of the costs and benefits associated with international education, and their perspectives on higher education both within China and globally. Despite the data being collected over ten years ago—during a time of significant growth in the number of Chinese students studying abroad (Statista, 2024)—it continues to offer valuable insights into the enduring and strong desire of Chinese students to pursue education overseas.

Variables

Dependent Variables

Our research primarily examines how self-funding and loan-based funding impact Chinese high school students' desire to study abroad, given the low likelihood of obtaining scholarships. We have identified two dependent variables: the desire to study abroad funded by self-fundedment and the desire to study abroad funded by loans. These variables were derived from survey questions that asked students to compare their intentions for overseas education with domestic education. Details about these dependent variables can be found in Table 1.

Table 1.
Measurement of Desire to Study Abroad

The Strength of Desires	Desires If Self-funded	Desires If Funded by A Loan
y=1(the lowest)	If self-funded, I do not plan to study abroad if any domestic university does not accept me.	If funded by a loan, I do not plan to study abroad if any domestic university does not accept me.
Y=2	If self-funded, I do not plan to study abroad if a vocational or private university accepts me but do plan to if not accepted.	If funded by a loan, I do not plan to study abroad if a vocational or private university accepts me but do plan to if not accepted.
Y=3	If self-funded, I do not plan to study abroad if a general university accepts me but do plan to if not accepted.	If funded by a loan, I do not plan to study abroad if I am accepted by a general university but do plan to if not accepted.
Y=4	If self-funded, I do not plan to study abroad if I am accepted by a pivotal university but do plan to if not accepted.	If funded by a loan, I do not plan to study abroad if I am accepted by a pivotal university but do plan to if not accepted.
Y=5	If self-funded, I do not plan to study abroad if I am accepted by Tsinghua University or Peking University but do plan to if not accepted.	If funded by a loan,I do not plan to study abroad if I am accepted by Tsinghua University or Peking University but do plan to if not accepted.
Y=6 (the strongest)	If self-funded, I do plan to study abroad if I am accepted by any university.	If funded by a loan, I do plan to study abroad if I am accepted by any university.

Note: In general, Students' preferences for studying at Chinese universities are ranked from highest to lowest as follows: Tsinghua University or Peking University, pivotal universities, general universities, and vocational/private universities.

Investment Factors

In our research, the investment factor refers to the expected net return on studying overseas (NB_s). This is calculated by subtracting the relevant expected costs from the expected benefits of studying abroad. The relevant costs include both the direct costs of studying abroad (C_a) and the opportunity cost of forgoing investment in a domestic university (B_d). The opportunity cost is the expected benefits (E_d) minus the direct costs (C_d) of studying domestically. The functions are as follows:

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$$NB_s = E_a - C_a - B_d \;;\; B_d = E_d - C_d \tag{4}$$

E_a represents the expected earnings ten years after graduating from an overseas university, while E_d represents the expected earnings ten years after graduating from a domestic university. C_a denotes the expected direct costs of a four-year study abroad program, and C_d denotes the expected direct costs of a four-year domestic study program.

The direct costs include educational expenses (such as tuition, registration, membership, book, and learning material fees) and living expenses (such as accommodation, transportation, food, and clothing).

Consumption Factors

Consumption factors include the anticipated costs of overseas higher education (P_s), domestic higher education (P_G), and the expected consumption benefits (Uc) associated with studying abroad. These costs include educational expenses such as tuition, registration fees, membership fees, and costs for books and learning materials, as well as living expenses like accommodation, transportation, food, and clothing. Expected consumption benefits represent the satisfaction or dissatisfaction derived from the experiences of learning, living, and traveling abroad. These values can be either positive or negative. In our study, expected consumption benefits are categorized into two groups: positive experiences and negative experiences. The positive experiences group includes factors related to the benefits of studying and living abroad. In contrast, the negative experiences group includes factors related to adverse experiences in education, daily life, and safety. Using factor analysis, we identified two distinct groups of factors: positive and negative. The positive factors include overseas learning experiences and living experiences, while the negative factors include obstacles related to life abroad, learning challenges, and issues of discrimination and insecurity. Data were collected through the questionnaire survey that asked students, "What attracts you to study abroad?" and "What obstructs you from studying abroad?" The estimation results of the factor analysis are summarized in Table 2.

Table 2.
Consumption Factors Produced by Factor Analysis

Positive Factors	Quetionnaire Items	Factor Loadings	Negative Factors	Quetionnaire Items	Factor Loadings
(1) Overseas learning experience	Technology invention	0.839	**(3) Overseas Life obstacle**	Away from family	0.889
	Technology utilized	0.825		Away from friends	0.834
	Rich teaching resource	0.784		Live independently	0.732
	Better facilities	0.694		Not adapting to local food	0.585
	Flexible teaching	0.662	**(4) Overseas Learning obstacle**	Not fitted to local teaching ways	0.826
	Leading knowledge	0.653		Language obstacle	0.782
	More major choices	0.552		Cultural barrier	0.743
	Pleasant learning	0.546	**(5) Overseas discrimination and**	Racial discrimination	0.847
	More educational opportunity	0.456		Insecurity	0.847

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			insecurity
(2) Overseas living experience	Multiple culture	0.844	
	Overseas living experience	0.833	
	Expand perspective	0.794	
	Meet local friends	0.685	

Note: The extraction method is Principal Component Analysis; the rotation method is Varimax with Kaiser Normalization. KMO = 0.824; Bartlett's Test of Sphericity < 0.001.

Constraint Factors

Table 3 introduces the constraint factors, which include family economic constraints, academic capability, and demographic characteristics. Due to the difficulty in directly obtaining accurate data on family income, we use three proxy variables to represent family economic constraints: the student's family wealth ranking within the local area, the father's education level, and the degree of urbanization of the family's location. These variables are closely linked to family income in China and serve as effective indicators of economic status. Academic capability significantly influences an individual's choice of higher education, as academic performance often determines educational opportunities. In China, students with higher academic capabilities are more likely to be admitted to top universities, which means they face higher opportunity costs when considering studying abroad than those with lower academic capabilities. Our models represent students' academic capabilities using class achievement rank and admission to a pivot high school. These variables are chosen due to the rigorous screening mechanisms in China's education system. Demographic characteristics are also considered, as they can affect students' preferences for investment or consumption in education.

Table 3.
The Constraint Factors

Variable	The Measurements
(1)Family economic constraint	
Family income	"Low income"=1; "middle income"=2; "high income"=3.
Father education	Father's years of schooling
Family location	"Villiage"=1; "county"=2; "middle or city"=3.
(2)Academic capability	
Academic performance	Whether ranked before 10% in class ("Yes"=1； "No"=0)
Pivot school	Whether in pivot high school ("Yes"=1； "No"=0)
(3)Demographic characteristics	
Gender	"Male"=1; "female"=0.
Ethnicity	"Han"=1; "Minority"=0

Estimation Method

Since the dependent variables in our research are ranked on an ordinal scale from 1 (the lowest) to 6 (the highest), we employed the ordinal logistic regression method. This approach extends the dichotomous logistic regression model, allowing us to model the likelihood of an ordinal dependent variable based on several independent variables. For a dependent variable with K ordinal levels, the cumulative odds model predicts the odds of being at or below a particular category. This model divides the K-level ordinal data by K-1

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cutoff points, each corresponding to the cumulative probability across successive categories. Let $f_j(x)$ represent the probability that a response falls in a category less than or equal to the jth category(j=1,2, …K-1). This gives us a set of cumulative probabilities for each case, with the final category always having a cumulative probability of 1. By extending the general logistic regression model, we calculate logits for these cumulative probabilities, as described by function (5).

$$\ln(Y_j) = \ln(\frac{f_j(x)}{1-f_j(x)}) = a_j + (b_1x_1 + b_2x_2 \cdots + b_px_p) \quad (5)$$

The cumulative logits for being at or below a particular category *j* can be exponentiated to calculate the estimated cumulative probabilities for being at or below that category, which can be presented in function (6).

$$\ln(odds_j) = a_j + (b_{1x} + b_2x_2 + \cdots + b_px_p)$$
$$odds_j = \frac{p(y \le j)}{1-p(y \le j)}, j = 1,2,3,4,5 \quad (6)$$

Ordinal regression assumes proportional, or parallel, odds, meaning that explanatory variables have the same effect on the odds across all categories. When using cumulative odds to fit the data, the assumption of parallelism implies a common odds ratio for a variable across all regressions. This means that one model can describe the relationship between the ordinal response variable and a set of predictors. SPSS provides a score test for the proportional odds assumption in its ordinal regression procedures. However, this omnibus test for proportionality is not robust and tends to be anticonservative, often resulting in very small p-values, especially with a large number of explanatory variables, a large sample size, or continuous explanatory variables (O'Connell, 2006). Given a large sample size, we use a significance level of 0.01 to determine whether the assumption of proportional odds holds (O'Connell, 2006). If the p-value is not less than 0.01, we can conclude that the effect of the explanatory variable is not statistically different across the five cumulative splits, and the slopes (and odds ratios) for the independent variable in each of these models are similar. Thus, the odds ratios for the explanatory variables can be estimated simultaneously using one model.

Data Description

Table 4 provides an overview of students' desires to study abroad, categorized by different groups. First, students exhibit a strong desire to study abroad, whether through self-funding or loans. More than 40% of students wish to pursue education abroad even if they gain admission to domestic universities, including prestigious institutions like Peking University and Tsinghua University. This percentage increases to over 50% if they cannot secure a place at Peking University or Tsinghua University but are accepted into other top universities. Only

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14% of students express no interest in studying abroad, even if they are unable to gain admission to any domestic university.

Second, the desire to study abroad varies significantly among different groups. Under both self-funding and loan-funding conditions, students from higher-income and urban families demonstrate a stronger interest in overseas education than those from lower-income and rural backgrounds. However, when self-funding, students with excellent exam results or those attending top high schools show less inclination to study abroad compared to those with lower exam scores or attending non-prestigious schools. This trend does not appear under loan-funding conditions.

Table 4.
Data Description

	The Self-funded Desire to Study Abroad						The Loan-funded Desire to Study Abroad					
	Y=1	Y=2	Y=3	Y=4	Y=5	Y=6	Y=1	Y=2	Y=3	Y=4	Y=5	Y=6
High-income family(%)	8.0	4.8	12.7	14.1	11.7	48.8	10.1	6.2	15.6	14.9	10.0	43.3
Middle-income family(%)	12.6	9.6	14.1	14.1	9.2	40.4	15.5	6.9	13.9	12.1	7.8	43.8
Low-income family(%)	21.0	9.0	13.6	14.1	10.0	32.3	19.4	5.1	11.1	13.6	8.4	42.4
Urban location(%)	11.7	8.2	14.2	13.6	9.5	42.7	13.3	6.6	14.4	13.3	7.9	44.4
County location(%)	14.2	8.1	12.4	15.2	11.3	38.7	16.5	5.8	13.3	12.5	9.0	43.0
Village location(%)	20.0	10.9	13.2	14.1	9.2	32.5	21.6	6.8	11.5	10.8	8.1	41.2
Rank in the Top 10%(%)	12.5	10.3	15.2	17.2	9.7	35.1	14.1	4.8	12.8	14.6	8.7	45.0
Rank in the Bottom 10%(%)	13.7	8.3	13.5	13.6	9.8	41.2	15.4	6.7	14.0	12.4	8.1	43.3
Pivot school(%)	13.5	8.7	13.6	15.7	9.7	39.0	14.5	6.6	13.8	14.0	8.5	42.6
Non-pivot school(%)	13.4	8.6	13.9	12.0	10.1	42.0	16.2	6.4	13.5	11.1	7.9	44.9
Male(%)	14.3	9.0	14.2	13.1	9.7	39.7	15.4	6.1	14.1	12.2	8.8	43.5
Female(%)	12.7	8.4	13.3	14.7	10.0	40.8	15.1	6.8	13.3	13.2	7.8	43.8
Han(%)	13.4	8.9	13.6	14.0	9.9	40.2	15.4	6.6	13.5	12.7	8.3	43.5
Minority	12.8	4.3	14.9	13.8	9.0	45.2	10.8	4.3	17.3	13.0	6.5	48.1
Total(%)	13.4	8.7	13.7	14.0	9.8	40.3	15.2	6.5	13.7	12.7	8.2	43.7

Estimation Results

The Impact under Self-funded Condition

Table 5 presents the estimation results of the investment, consumption, and mixed models. All models were examined using the score test provided by SPSS PLUM to check the assumption of parallelism in ordinal regression. The p-values for the models were p=0.212 for model 1, p=0.465 for model 2, and p=0.215 for model 3, all of which are greater than 0.001. This indicates that ordinary regression can reliably identify the effects on students' desires to study abroad. Based on the results of the mixed model, we have the following findings:

First, regarding the impact of Investment factors, when considering self-funding, the expected net return on overseas higher education has a significantly positive effect on students' desire to study abroad. Specifically, for every additional 10,000 Yuan in expected

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return, students' interest in overseas education increases by 1%. This finding suggests that students consider studying abroad as an investment decision.

Second, when examining the impact of consumption factors in the context of self-funding, factors such as the expected cost of both overseas and domestic higher education, as well as the anticipated consumption value of studying abroad, significantly influence students' desire to pursue education overseas. Our findings show that the costs of overseas and domestic education have statistically significant effects on students' interest in studying abroad, but in opposite directions. For overseas education, each additional 10,000 Yuan in cost reduces students' desire by 2%. In contrast, domestic higher education costs, which can be regarded as a substitute for studying abroad, increase students' desire to study overseas by 18% per additional 10,000 Yuan. This suggests that students are more sensitive to the costs of domestic education than to those of overseas education. The anticipated consumption benefits of overseas education also play a crucial role, as students seek the immediate satisfaction of studying abroad. A one standard deviation increase in the expected overseas learning experience boosts students' desire to study abroad by 14.4%, while a similar increase in the expected overseas living experience raises it by 11.6%. Conversely, negative factors decrease students' desire: a one standard deviation increase in expected overseas life obstacles reduces their interest by 6%, while increases in overseas learning obstacles and experiences of discrimination and insecurity reduce it by 6.8% and 6%, respectively.

Third, when considering constraint factors, students' desires to study abroad are influenced by their demographic and family backgrounds under the self-funded conditions. Students from high-income families have a significantly stronger desire to study abroad, with their interest being 1.9 times greater than those of low-income families. Students from middle-income families also have a stronger desire, at 1.345 times that of low-income families. The educational level of a student's father positively affects their desire to study abroad, with each additional year of the father's schooling resulting in a 3.2% increase in the student's desire. Additionally, the level of urbanization of a student's family location significantly impacts their aspirations to study abroad. Students from urban areas exhibit a desire 1.345 times stronger than those from rural areas, while those from county areas show a desire 1.265 times stronger than those from villages. In contrast, students' academic performance, as indicated by their exam scores ranking in the top 10% of their class or attendance at prestigious high schools, negatively affects their desire to pursue overseas education. Students whose scores rank in the top 10% have an 80.4% desire compared to those ranked below the top 10%. Similarly, students attending pivot high schools have a lower desire to study abroad, with their interest being only 80.4% that of students in non-prestigious schools. Gender and ethnicity do not significantly affect students' desires to study overseas.

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Table 5.
The Impact on Students' Desire to Study Abroad If Self-funded

	(1) Investment Model		(2) Consumption Model		(3) Mix Model	
	Estimate	Odds ratio	Estimate	Odds ratio	Estimate	Odds ratio
Investment factorss						
Expected net return (10 thousand RMB)	0.001*** (0.000)	1.001	-	-	0.001** (0.000)	1.001
Consumption factors						
Expected overseas price (10 thousand RMB)	-	-	- 0.002*** (0.001)	0.998	-0.002** (0.001)	0.998
Expected domestic price (10 thousand RMB)	-	-	0.018*** (0.004)	1.018	0.018*** (0.004)	1.018
Expected overseas learning experience	-	-	0.136*** (0.027)	1.146	0.134*** (0.027)	1.144
Expected overseas living experience	-	-	0.108*** (0.027)	1.114	0.110*** (0.027)	1.116
Expected overseas life obstacle	-	-	-0.065** (0.027)	0.937	-0.062* (0.027)	0.940
Expected overseas learning obstacle	-	-	- 0.071*** (0.027)	0.931	0.070* 0.027)	0.932
Expected overseas discrimination and insecurity	-	-	-0.062* (0.027)	0.940	-0.063* (0.027)	0.940
Constraint factors						
Middle-income family (Ref: low-income family)	0.318*** (0.072)	1.374	0.293*** (0.074)	1.341	0.298*** (0.074)	1.345
High-income family (Ref: low-income family)	0.685*** (0.094)	1.984	0.642*** (0.098)	1.900	0.642*** (0.098)	1.900
County (Ref: Village)	0.233	1.262	0.231* (0.094)	1.260	0.235* (0.094)	1.265
City (Ref: Village)	0.323*** (0.079)	1.381	0.288*** (0.082)	1.334	0.296*** (0.082)	1.345
Rank in the Top 10% (Ref: bottom 10%)	-0.167* (0.073)	0.846	-0.213** (0.075)	0.808	-0.218** (0.075)	0.804
Pivot high school (Ref: non-pivot high school)	-0.161** (0.055)	0.851	-0.178** (0.056)	0.837	-0.175** (0.057)	0.839
Father education (years)	0.035*** (0.010)	1.035	0.032** (0.011)	1.033	0.032** (0.011)	1.032
Male (Ref: female)	-0.030 (0.053)	0.970	-0.013 (0.055)	0.987	-0.016 (0.055)	0.984
Han (Ref: minorities)	-0.114 (0.141)	0.892	-0.156 (0.145)	0.856	-0.139 (0.145)	0.870
-2 Log likelihood	p=0.000<0.01		p=0.000<0.01		p=0.000<0.01	
Parallel test	p= 0.212>0.01		p= 0.465>0.01		p= 0.215>0.01	

Note: * p<0.05, **p<0.01, *** p<0.001

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The Impact under Loan-funded Condition

Table 6 presents the estimation result of the investment, consumption, and mixed models. As mentioned earlier, ordinal regression assumes parallelism, which can be examined using the score test available in SPSS PLUM. In these three models, all passed the score tests, with p-values of 0.232 for Model 1, 0.377 for Model 2, and 0.214 for Model 3, each exceeding the threshold of 0.001 or 0.01. This allows us to confidently use the ordinal regression approach to estimate the impact of factors on students' desire to study abroad. Based on evidence from the mixed model, the findings are as follows:

First, when loans are provided for studying abroad, the expected net return no longer significantly impacts students' desire to study abroad. Similarly, the cost factors for both overseas and domestic higher education lose their influence on students' intentions to pursue education abroad. However, variables representing the anticipated consumption value of studying abroad continue to have a significant effect. Among the positive factors, a one standard deviation increase in the expected overseas learning experience is associated with a 20.8% increase in students' desire to study abroad. Similarly, a one standard deviation increase in the expected overseas living experience is linked to an 8.2% increase in desire. Conversely, negative factors reduce students' interest in studying abroad: a one standard deviation increase in the expected overseas life obstacles results in a 6.6% decrease in desire, while increases in expected overseas learning obstacles and experiences of discrimination and insecurity lead to decreases in 11.9% and 7.3%, respectively.

Second, when loans are provided for overseas higher education, the impact of constraint factors such as family income, father's education, family location, and personal academic capabilities becomes insignificant in influencing students' desires to study abroad. This suggests that with loan financing, students across different family backgrounds and academic achievements show no significant variation in their interest in overseas education. This change may be due to the reduced financial constraints provided by the loans, which diminish the influence of family economic background. The lack of significance in academic capability variables may result from the fact that loan financing alters students' perceptions of the opportunity costs associated with studying abroad.

Table 6.
The Impact on Students' Desire to Study Abroad If Loan-funded

	(1) Investment Model		(2) Consumption Model		(3) Mix Model	
	Estimate	Odds ratio	Estimate	Odds ratio	Estimate	Odds ratio
Investment factors						
Expected net return to study abroad (10 thousand RMB)	0.000 (.000)	1.000			0.000 (.000)	1.000
Consumption factors						
Expected overseas price(10 thousand RMB)	-	-	-0.001 (0.001)	0.999	-0.001 (0.001)	0.999
Expected domestic price (10 thousand RMB)	-	-	0.008 (0.004)	1.008	0.008 (0.004)	1.008
Expected overseas learning experience	-	-	0.189*** (0.027)	1.208	0.189*** (0.027)	1.208
Expected overseas living experience	-	-	0.079** (0.027)	1.082	0.079** (0.027)	1.082

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Expected overseas life obstacle	-	-	-0.069* (0.028)	0.934	-0.068* (0.028)	0.934
Expected overseas learning obstacle	-	-	-0.126*** (0.028)	0.881	-0.126*** (0.028)	0.881
Expected overseas discrimination and insecurity	-	-	-0.076** (0.028)	0.927	-0.076** (0.028)	0.927
Constraint factors						
Middle-income family (Ref: low-income)	0.044 (0.073)	1.045	0.010 (0.075)	1.010	0.011 (0.075)	1.011
High-income family (Ref: low-income)	0.117 (0.094)	1.125	0.077 (0.098)	1.080	0.077 (0.098)	1.078
County	0.127 (0.092)	1.136	0.093 (0.095)	1.098	0.094 (0.095)	1.099
City (Ref: Village)	0.192* (0.080)	1.211	0.147 (0.083)	1.158	0.149 (0.083)	1.161
Rank in the Top 10% (Ref: bottom 10%)	0.137 (0.074)	1.147	0.079 (0.076)	1.082	0.077 (0.077)	1.081
Pivot high school (Ref: not pivot high school)	-0.062 (0.055)	.940	-0.073 (0.057)	0.929	-0.073 (.057)	0.930
Father education (years)	0.015 (0.010)	1.016	0.014 (0.011)	1.015	0.014 (0.011)	1.014
Male (Ref: female)	0.013 (.054)	1.013	0.025 (0.056)	1.025	.024 (.056)	1.024
Han (Ref: minorities)	-0.186 (0.143)	0.831	-0.177 (0.147)	0.838	-0.174 (0.147)	0.840
-2 Log likelihood	p=0.000<0.01		p=0.000<0.01		p=0.000<0.01	
Parallel test	p= 0.232>0.01		p= 0.377>0.01		p= 0.214>0.01	

Conclusions

With the growing internationalization of higher education, the trend of studying abroad in China is expected to persist. This raises the question of how these students make their decisions about overseas education. Are their choices driven by the potential for economic returns or by the desire for international experiences? To address this, we used consumer choice theory and human capital investment theory to develop a mixed model to examine both consumption and investment motives for studying abroad. Our analysis, based on a survey data from seven China's cities with varying economic development levels, led to the following conclusions:

First, students' desires to study abroad are mainly driven by the potential economic benefits they perceive from investing in their education, especially when they are funding their studies themselves. In this self-funded scenario, students carefully evaluate the expected return on their investment. However, when their studies are financed through loans, these economic considerations become less prominent. This shift suggests that students may engage in less rational investment behavior, as the immediate financial burden is mitigated by the availability of loans.

Second, the perceived consumption benefits of studying abroad, such as positive educational and cultural experiences, have a significant impact on students' desire to study overseas, regardless of their funding conditions. Students are more likely to pursue international education when they anticipate enriching experiences abroad. On the other

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hand, concerns about adapting to life overseas, safety, and discrimination reduce their desires. While price factors also influence choices when students are self-funding, they become less important when loans are available, further indicating the irrational nature of consumption behavior in this context.

Third, background constraints, such as family wealth and urbanization, significantly affect students' willingness to study abroad under self-funding conditions. Students from wealthier and more urban families, or those with more educated fathers, are more inclined to study abroad. Conversely, students with higher academic abilities tend to show less interest, possibly due to the opportunity costs of missing out on quality domestic education. When student loans are available, these background factors become less relevant, as the reduced financial constraints allow students to overcome economic limitations and reassess the opportunity costs of studying abroad.

In conclusion, theories of consumer choice and human capital investment effectively explain why high school students might choose to study abroad when self-funding. However, once student loans are available to alleviate financial constraints, the focus shifts. Human capital theory becomes less relevant, and price factors no longer significantly influence students' decisions. Instead, the perceived value of the experience becomes the primary consideration. This shift can lead to irrational behavior that negatively impacts both individual welfare and societal development. For example, students from less affluent backgrounds might pursue the perceived consumption value of studying abroad with loans without fully considering future returns or financial implications, potentially leading to financial difficulties.

When China was less wealthy and the loan market was less developed, economic factors played a major role in decisions about studying abroad due to financial constraints. However, with rapid economic growth and the expansion of the education loan market, obtaining student loans has become easier. As a result, financial costs are no longer the primary barrier to studying abroad. Nevertheless, relying heavily on family assets to fund education abroad without thoroughly evaluating potential returns remains risky. This irrational approach can threaten future financial stability. While studying abroad offers valuable experiences, it is crucial to avoid overspending on international education without sufficient financial planning.

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Declaration of Conflicting Interests

There is no conflinct of interest to be cited here.

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Human Participants

There were human participants, all of whom consented to take part in this study. All other ethical considerations are observed in alignment with the author's institutional policies and the journal's guidelines.

Originality Note

The authors confirm that the research is their original works; and proper citations are included where others' works are cited.

Use of Generative AI/ AI-assisted Technologies Statement

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Demand for Studying Abroad: Evidence from China

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