

College Student Entrepreneurship in China: Results from a National Survey of Directors of Career Services in Chinese Higher Education Institutions

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As the number of college graduates increases dramatically in recent years in China, the Chinese Central government encourages college graduates to partake in entrepreneurial activities. The current study uses data from a nationwide institutional survey of directors of career services of 840 Chinese colleges and universities to study the current situation of student entrepreneurship and relevant institutional guidance practices. Our results show that, although China's college graduates have a high level of entrepreneurial intention, the actual entrepreneurship population is low, and the entrepreneurship survival rate is not high. Among all colleges and universities, directors of career services in most competitive universities rate higher to the entrepreneurial guidance practices provided in their institutions. Our findings suggest that governments and higher education institutions should pay attention to cultivating college students' entrepreneurial spirit, encouraging opportunity entrepreneurship, as well as providing substantial startup supports based on actual needs.

Introduction

In view of entrepreneurial activities playing an important role in aspects such as creating employment opportunities, increasing productivity and promoting national economic development (Audretsch & Keilbach, 2003; Wong, Ho, & Autio, 2005), many countries encourage entrepreneurship to alleviate poverty and promote national economic growth (Van Stel, Storey, & Thurik, 2006). Existing literature has documented the importance of entrepreneurial talent on China's economic

development since the 1980s. It is argued that the movement of entrepreneurial talents (e.g., peasant turned entrepreneurs, bureaucrat-turned entrepreneurs, overseas-returning and engineer-turned entrepreneurs) from traditional sectors (government, agriculture) to business activities has enabled China to realize its economic boom (Zhang et al., 2010).

Unlike the fast growth of China's economy since the 1980s, the overall size of China's higher education was relatively small before 1999. According to UNESCO, the 1996 gross college enrollment ratio in China was only 5%. This ratio was lower than that in India (6.3%), whose GDP per capita was less than one-half of China's, and was much lower than those in Thailand (20.7%) and in Philippines (28.8%), where the GDP per capita was equivalent to China's. In 1999, China began the largest and longest continuous expansion in higher education, and its overall college enrollments outnumbered the US (the largest higher education system of the time) in less than ten years. As a result, the number of college graduates has dramatically increased, thus leading to greater employment pressure on college students in the 21st century. The Chinese Central Government has published a number of policies to encourage college students and graduates to actively partake in entrepreneurial activities since the late 1990s, in the hope of rendering entrepreneurship as a new growth point in driving college student employment. Along with China's economic "new normal," the Chinese Central Government proposed the "mass entrepreneurship and innovation" policy in 2015 to promote China's entrepreneurial activities toward a climax. As the key to entrepreneurship is innovative talent, Chinese central and provincial-level governments expect college students, who are persons of high quality and high ability, to serve as a strong reserve force of entrepreneurial activity. Chinese universities also carry out the practices for the entrepreneurship education of college students, provide venture funds and services, and establish startup hubs and incubation bases, so as to encourage and support the self-employment and entrepreneurial activities of college students.

With the policy and economic environments favoring entrepreneurship, it is very natural to ask if these environments also bring in sufficient amount of opportunities for college students and graduates to participate in entrepreneurial activities. Based on unique data from a national institutional survey of directors of career services in Chinese colleges and universities, the present study intends to investigate the general entrepreneurial activity status of Chinese college students and higher education institutions' overall guidance practices of promoting student self-employment. The study also intends to describe the differences in the above situations among regions and colleges. One of our contributions lies in the data we collected. The data employed bears the advantage of objectivity and accuracy from administrative statistics on each institution surveyed, and at the same time, the data enables us to enjoy the self-

reported perceptions from close observers. In addition, the extensiveness in terms of the survey's geographical scope enables our findings to represent the general status of college student entrepreneurship in China. The other contribution of our study lies in the institutional and individual aspects of the entrepreneurial process. Different from previous studies, our study integrates college student entrepreneurship indicators at all stages (e.g., interest, intention, actual entrepreneurship, survival) and tries to provide an all-in-one description of college student entrepreneurship in China.

Literature Review

The development of college student entrepreneurial activities and the publication of related policies have led to college student entrepreneurship becoming a hot topic of academic discussion. From a dynamic perspective, entrepreneurial process can be viewed as a set of stages that follow one another: idea, the triggering event, implementation, and growth (Nassif et al., 2010). In the context of college student entrepreneurship, these stages can be restated as entrepreneurial intention, graduation as the triggering event, actual entrepreneurship after graduation, and survival or failure of entrepreneurial activities, respectively.

Entrepreneurial intention is considered as the best predictor of actual entrepreneurship. In view of previous research, college student entrepreneurial intention was mostly analyzed from the perspective of individual college students (Sun & Wei, 2011; Xu, Mei, & Ni, 2015; Ye, 2009; Zhou, Feng, & Chen, 2014; Xiang & Lei, 2014; Gao & Su, 2013). Individual attributes, resources accessed, as well as external (e.g., policy, cultural) environment are examined as common factors influencing college student entrepreneurial intention (Xia, Luo, & Yan, 2012; Ye, 2011; Chen & Sun, 2009; Qian & Chen, 2011; Chen & Mao, 2009). We find that a few studies have tried to estimate the percentage of college students who have entrepreneurial intentions in China (Tang & Yu, 2012; Zhang, Kang, & Ding, 2010; Chu & Zhang, 2013). It is noted that most of them are for entrepreneurial intention rate in a specific province or city¹, and the estimated entrepreneurial intentions among college students range from 25.9% to 70%. However, these local estimates are systematically much larger than Global Entrepreneurship Monitor (GEM) estimates of entrepreneurial intentions among

¹ According to the survey data from the National College Student Information Consultation and Employment Guidance Center, about 25.9% of college students had strong entrepreneurial intentions, and 53.02% had previously had such entrepreneurial intentions, thus reflecting the general entrepreneurial willingness of college students (Chu & Chang, 2008). As revealed by the survey of 716 undergraduate students in Zhejiang Province, 43% of the students chose entrepreneurship, and 37% agreed with and would consider entrepreneurship (Tang & Yu, 2012). Based on the survey of 1060 undergraduate students in 15 universities and higher vocational colleges in Wuhan City, it was shown that 65.0% of the college students had considered entrepreneurship (Zhang, Kang, & Ding, 2010). The survey of 448 college students in Hebei Province indicated that nearly 70% of the students were interested in entrepreneurship with entrepreneurial impulse (Chu & Zhang, 2013).

Chinese 18-64 populations (19.52% in 2015) and are also contradictory to our intuitions regarding college student entrepreneurship.

According to GEM data², entrepreneurial activity in China has rapidly increased, with the average percentage of early-stage entrepreneurial activity (TEA) over the past 10 years being about 15%, which is slightly higher than in US (12%). The GEM estimate is an overall percentage of entrepreneurship for the entire adult population (18-64 year-olds). If focusing on the group of college graduates in China, the estimate of actual entrepreneurship after graduation is not consistent, ranging from less than 1% to almost 3%, depending on the sample selected and the definitions of key terms (e.g., entrepreneurship, graduate, time point).

If we differentiate individuals who participate in TEA by motivation, GEM defines, those who choose to pursue an opportunity as a basis for their entrepreneurial motivations, as opportunity-driven entrepreneurship, and those, who have no better options for work and start out of necessity, as the necessity-driven entrepreneurship. Since opportunity-driven entrepreneurship will bring more employment opportunities for the society, it is considered to have a larger employment effect than necessity entrepreneurship. The motivation index in China estimated by GEM, which is the ratio of opportunity-driven to necessity-driven entrepreneurship, increases from 0.8 in 2010 to 1.5 in 2015. In contrast, the corresponding ratios for the same period in the US (1.8 and 6.4, respectively) are much higher, indicating different overall compositions of entrepreneurial populations existing in China and the US.³ It is found that entrepreneurs with college and above level of education are more likely to be in opportunity-driven entrepreneurship (according to GEM China report 2007, entrepreneurial, transition and employment effect); however, we haven't found any specific estimates regarding the percentage of opportunity-driven entrepreneurship among college graduates.

At the growth stage of entrepreneurial process, GEM does not provide direct indicators for entrepreneurial activities. However, GEM's *fear of failure rate*, which calculated using the percentage of entrepreneurial population who claims that fear of failure would prevent them from setting up a business, can serve as an indirect measure. China has a rate of 49% in 2016, as opposed to a rate of 33% in the US, and is among one of the economies with the highest fear of failure rate. In terms of the actual survival time of enterprises, the State Administration for Industry & Commerce of China (SAIC) conducted an analysis of all the domestic enterprises in the country since 2000. SAIC found 98.4% of Chinese enterprises survive their first year, two-thirds

² Source: <http://gemconsortium.org/country-profile/51>

³ The two economies have a similar percentage of TEA.

survive their fifth year, and 53% survive their eighth year. The peak period of exit is from the third to the seventh year. One survey of 2000 young entrepreneurs in Haidian District, Beijing, China, shows similar trends (Ding & Wang, forthcoming). It was found that in the first two years since the foundation of enterprises, the enterprise closing rate was low, at about 5.5%, and the annual closing rate was below 5%. We haven't found any studies or official statistics regarding survival time of college graduate entrepreneurial activities.

As entrepreneurship does not take place in a vacuum, along with the entrepreneurial process, there are many external factors influencing entrepreneurial activities. These factors range from market to government, from culture to infrastructure, as well as from research and development (R&D) to education. In these aspects, GEM's entrepreneurial ecosystem indicators provide valuable implications concerning how easy or difficult it could be to generally start up in a country. According to GEM's policy brief of China, physical infrastructure and market openness are the biggest enablers for entrepreneurship, while availability of financial support and entrepreneurial education serve as the main constraints for entrepreneurship in China. However, it is also noted that GEM indicators are aggregated ones that cannot describe potential differences existing within a country. For example, China is a big and diverse country, the same entrepreneurship policy from central government can be implemented differently at provincial and local levels, and entrepreneurship education can vary at college/university level as well. Thus, compared with China's overall entrepreneurship ecosystem, the local system experienced by individual college graduate entrepreneurs generates direct impact on entrepreneurial activities. Previous research lacks a systematic and objective investigation regarding the present entrepreneurial activity status of Chinese college students and the local entrepreneurship ecosystems due to the insufficiency of comprehensive survey data. It is difficult to obtain a comprehensive understanding of the overall entrepreneurial activity situation of college students throughout the country, and to further compare the entrepreneurial activities for different college types in various localities.

Methodology

Institutional Survey In 2015, the Graduate School of Education's Institute of Economics of Education at Peking University undertook a technical assistance project from the Asian Development Bank, titled "Policies for promoting employment of college graduates in China", to carry out an institutional survey of colleges and universities nationwide, regarding their students' employment and entrepreneurship, as well as their practices of career services. The investigation subjects were the directors of career services of colleges and universities. The survey was conducted using an online real-name method, requiring the directors of career services to

complete the questionnaire according to the actual statistical data of college and university graduates.

One-stage cluster sampling was applied and province is the primary sampling unit (PSU). With consideration to geographical regions (east, central and west) and provincial economic development levels, institution density and number of graduates, 14 provinces (municipalities) of 32 provincial administrative units throughout the mainland were chosen to be sampled as the subjects of the investigation. The samples covered 45% of Chinese provinces/municipalities and 56% of regular higher education institutions in China, and the number of college graduates from the sample institutions accounted for 56% of the national total. After extracting provinces, the online survey link was sent to the directors of career services of all of the institutions in the selected provinces (1408 in total). There were 1065 copies of returned online survey questionnaires, of which the valid sample size was 881, indicating a 60% valid return rate. We constructed a sampling weight for each observation to make our sample a nationally representative one. The weight compensates for sampling institutions' unequal probabilities of selection and their non-response. In addition, we conducted a post adjustment of the weight according to number of institutions in four tiers (Project 985 universities or 985, Project 211 universities or 211, general undergraduate colleges/universities or UG, vocational colleges or VOC).⁴

Table 1. Characteristics of Sample Institutions

Variable	Categories	N	%	Weighted %
Region	Eastern	374	42.45%	45.90%
	Central	260	29.51%	33.94%
	Western	247	28.04%	20.16%
Institution	985	19	2.16%	1.53%
	211	20	2.27%	2.86%
Tier & Type	Undergraduate	396	44.95%	43.36%
	Vocational	446	50.62%	52.25%

In addition to the survey having a representative and large sample with comprehensive coverage, the obtained data also had the two following advantages. The first is the college administrative data obtained by this study can be complementary with past student self-reported data to improve the accuracy of the understanding of the present situation of entrepreneurship. The second advantage is

⁴ Project 211 and project 985 are the Chinese central government's endeavors aimed at founding high-level universities for the 21st century. These projects were initiated in 1990s and universities selected were provided substantial amount of earmarked appropriations to develop into national and world-class universities. Therefore, 211 and 985 universities are also considered as the second and the first tier of higher education institutions in China.

that the directors of career services can understand and grasp the implementation more fully in terms of the practical work in colleges and universities.

Variables and Methods In the questionnaire, the content related to college student entrepreneurship included the basic situation of graduate entrepreneurship and the situation of various university practices to promote the entrepreneurship of college students. In Table 2, we summarize the key variables employed in the present study. Variables are divided into two general categories, measuring the student entrepreneurship from the perspectives of process and environment, respectively. Specifically, college student entrepreneurial intention, actual entrepreneurship after graduation, types of entrepreneurship, as well as the survival of entrepreneurial activities constituted variables in the process perspective. Variables in the perspective of entrepreneurial environment referred to the local environment at the institutional level, including curriculum and training,⁵ services, funds, infrastructure (e.g., hubs and incubators) provided for entrepreneurial activities of college students. Both categories included objective and subjective measures. The objective measure was reported by directors of career services according to administrative records, and the subjective measures were the directors' personal perceptions on corresponding aspects.

Weighted means are calculated to provide overall estimates for college student entrepreneurship and institutional entrepreneurial environments. In addition, for each variable, we calculated and compared the weighted means of key variables by regions (eastern, central, western) and by institution tiers (985, 211, undergraduate, vocational), respectively. ANOVA analysis and F test are conducted to examine whether differences among groups are statistically significant.

⁵ Currently, college student entrepreneur courses and trainings in most Chinese higher education institutions are organized by department of career services. Typical courses focus on sharing of hands-on experiences.

Table 2. Descriptive Statistics of Key Variables

Variable		Min	Max	Mean	
Process	Entrepreneurial intention	Intention rate (%)	0	78.43	3.95
		Perceived interest in entrepreneurship	1	4	2.94
	Actual entrepreneurship	Actual number of entrepreneurship	0	141	12.2
		Actual entrepreneurship rate (%)	0	9.69	.48
		Perceived increase in entrepreneurship	1	4	3.01
		Opportunity entrepreneurship (%)	0	100	71.75
	Entrepreneurship type	Employment difficulty as perceived reason for entrepreneurship (%)	0	100	10.35
		1-year survival rate (%)	0	100	53.62
	Survival rate	Perceived high survival rate of student entrepreneurship	1	4	2.14
	Curriculum and training	Number of entrepreneurial courses	0	45	2.1
Services	Number of services provided	0	5	3.27	
Environment	Venture funds	Amount per project (10000 YUAN RMB)	.04	30	3.14
		Funding shortage as perceived obstacles	1	4	3.14
	Hubs and incubators	Number of projects in incubator	0	200	7.97
	Perceived quality of institutional practices	Curriculum and training	1	4	3.04
Services		1	4	3.07	
Venture funds		1	4	2.66	
Hubs and incubators		1	4	2.82	

Note: Weighted means applied.

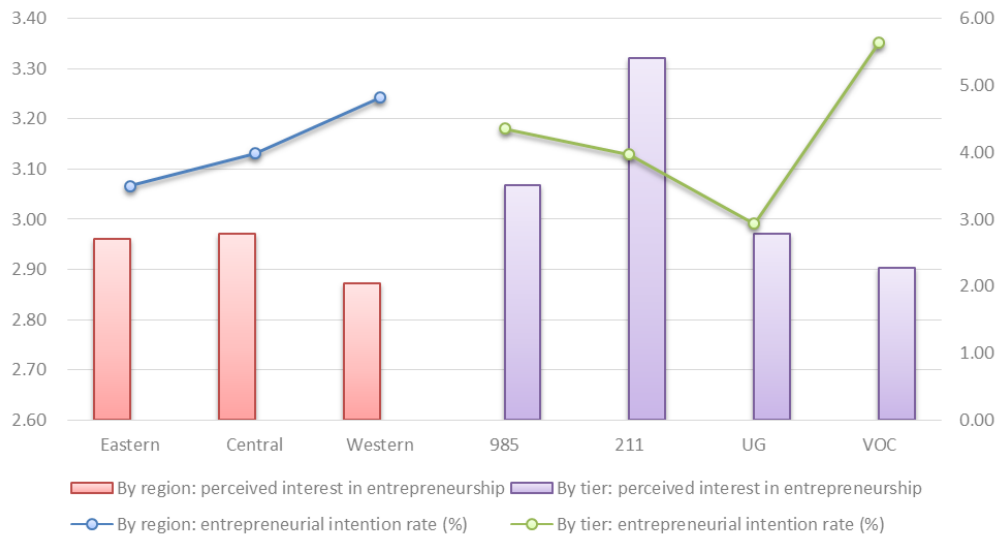
Empirical Results

Our survey indicates nearly 70% of directors for career services agree and very strongly agree with the following statement: “current college students are interested in entrepreneurship.” It can be seen in recent years, college students are more interested in entrepreneurship. Nevertheless, our study shows that the mean rate of college students who have entrepreneurial intentions is only 3.95%, which is not consistent with previous local studies. One of the reasons for this inconsistency may lie in who is surveyed. Directors of career services may only count those who have serious considerations for entrepreneurial activities as having intentions, and thus could serve as a better predictor of actual entrepreneurship than student self-reported intentions, which may be causal.

As viewed from regional and institutional tiers, directors of career services at colleges and universities in the central regions have the highest degree of agreement with the statement, “current college students are interested in entrepreneurship”. While the lowest degree of agreement was found in the western regions. This shows that the entrepreneurial enthusiasm of college students in the central and eastern regions is

greater compared to the western regions. Among colleges and universities of different tiers, the degrees of agreement of 985 universities and 211 universities are higher than those of general undergraduate and higher vocational colleges, suggesting that students of competitive universities are more interested in entrepreneurial activities in recent years. But in terms of entrepreneurial intention rates, students from vocational colleges and institutions in western regions have the highest intention rates (5.64% and 4.81%, respectively). Opposing patterns between perceived interest and in intention rate exist when the means are disaggregated by region and institutional tier. It is implied the top-down promotion of the idea of “mass entrepreneurship and innovation” may have promoted the awareness of entrepreneurship among college students, however, whether awareness or interest will transfer to serious intention still depends on many other factors, one of which could be the affluence and potential benefits of academic or work opportunities other than entrepreneurship.

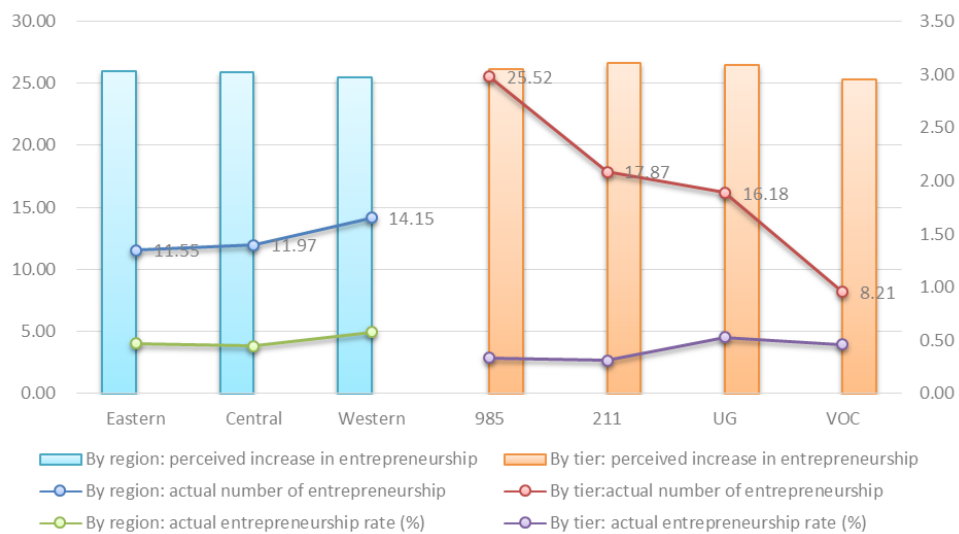
Figure 1. Entrepreneurial Intentions by Region and Institutional Tier



In terms of college student entrepreneurship trends, nearly 80% of the directors agree and very strongly agree with the statement: “there has been a great increase in the number of entrepreneurship students in recent years”. According to the related research and subjective perceptions of directors of career services, college graduates presently exhibit common entrepreneurship intentions, with entrepreneurial enthusiasm rising and self-employment population increasing. However, the survey results show the graduate population with actual entrepreneurship after graduation accounts for only a small proportion of those with entrepreneurial intention. As viewed from the samples of this survey, the college graduate population with actual entrepreneurship is averaged at 12 people, only accounting for 0.48% of actual

employment and 12.1%⁶ of the graduates with entrepreneurial intention. In terms of region and college types, the average number of actual entrepreneurship for college graduates in the western region is 14.15, accounting for 0.58% of total number of graduates, which is higher than the central and eastern regions (11.55 and 11.97, 0.47 and 0.45%). The average number of actual entrepreneurship after graduation from 985 universities is 25.52%, which is higher than that of 211 universities (17.87%), the general undergraduate colleges and universities (16.18%), and higher vocational colleges (8.21%).

Figure 2. Actual Entrepreneurship by Region and Institutional Tier



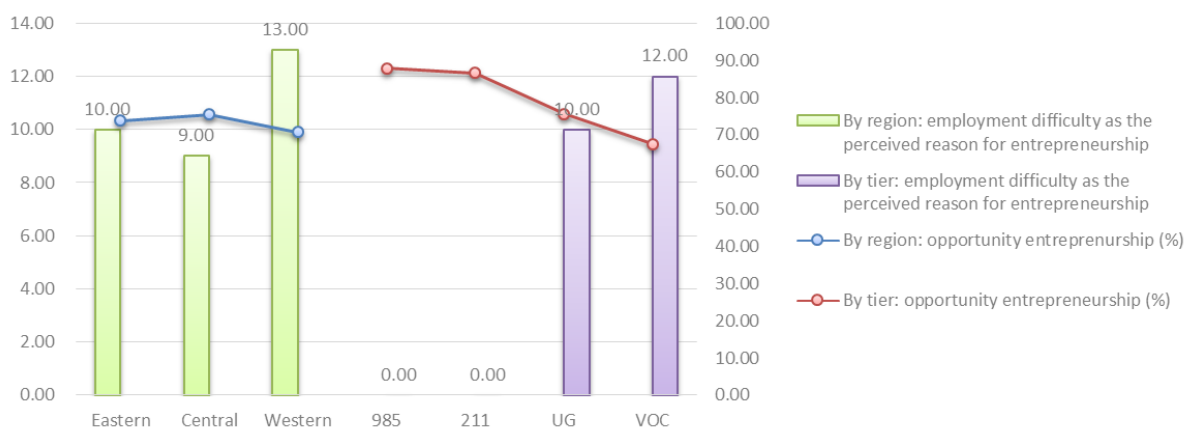
There is no significant difference in the perceived increase in entrepreneurship among regions and institutional tiers. However, in terms of the number of actual entrepreneurship among institutional tiers, there is a statistically significant difference. There are a greater number of graduate entrepreneurs from highly competitive universities (such as 985 universities) than other colleges and universities. Two reasons may account for this phenomenon. On one hand, institutional size of 985 universities is generally larger than that of others. Whereas, graduates with entrepreneurial intentions from the 985 universities are more likely to choose actual entrepreneurship. In our sample, the percent of graduate entrepreneurship by those with entrepreneurial intentions from the 985 universities is close to 30%, which is much higher than the sample mean (12.1%). It may imply that 985 universities provide their graduates with entrepreneurial support with higher quality.

Opportunity entrepreneurship is defined by the entrepreneurial activities toward finding business opportunities, and necessity entrepreneurship is defined by the

⁶ Calculated by dividing 0.48% by 3.95%.

forced entrepreneurship under survival pressure (Hay, Cox, Reynolds, Autio, & Bygrave, 2002). Based on China's data from the *Global Entrepreneurship Monitor*, in 2006 the proportions of China's opportunity entrepreneurship and necessity entrepreneurship were 59.2% and 38.7%, respectively (Gao J. , 2006). Among the sample colleges and universities covered in the survey, the proportions of opportunity entrepreneurship and necessity entrepreneurship were 71.75% and 28.25%, respectively. This shows that the entrepreneurship of current college graduates in China is mainly based on business opportunities, and the percentage of opportunity entrepreneurship in college student populations is higher than that among the general population. The undergraduates who are forced to choose entrepreneurship under employment or survival pressure account for only a small proportion. This is also confirmed by the subjective ranking of "potential reasons of student entrepreneurship" by directors of career services. There are only 10% of directors who chose "employment difficulties" as one of the three main reasons for entrepreneurship, and they believe most college students who choose self-employment mostly do so due to individual reasons, such as personality traits and job preference (43.9%), as well as the consideration of favorable projects (23.4%).

Figure 3. Type of Entrepreneurship by Region and Institutional Tier

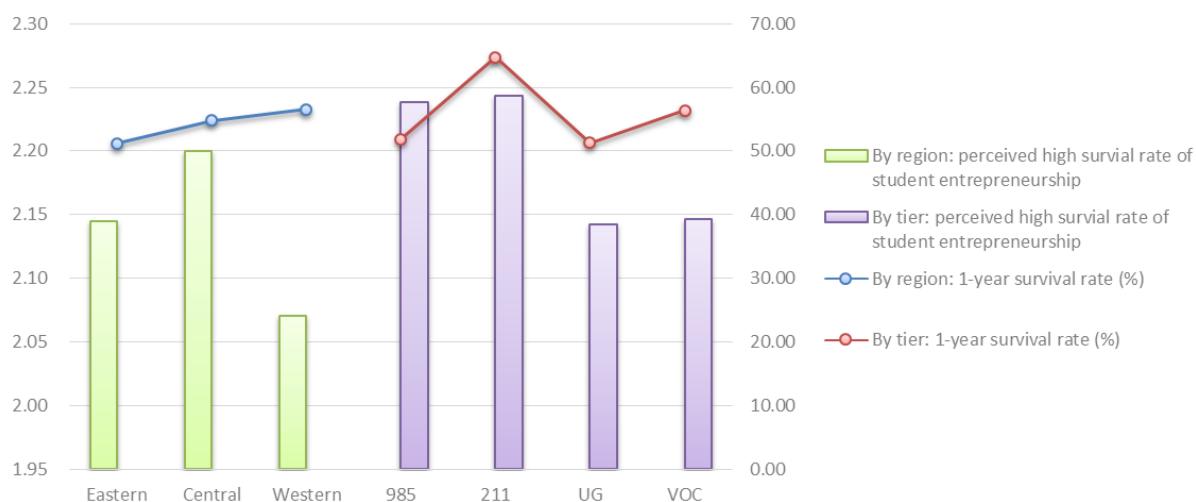


As viewed by the regions and institutional tiers, the difference in terms of percentage of opportunity entrepreneurship is not significant, but it is significant among tiers of institutions. The proportions of opportunity entrepreneurship for the 985 universities and 211 universities are higher, at 87.89% and 86.65%, respectively, while that of general undergraduate colleges and universities is 75.66%, and that of higher vocational colleges is 67.53%. In terms of the perceived reason for entrepreneurship, more graduates in higher institutions in western China and those in vocational colleges may count employment difficulties as one of the reasons for entrepreneurship, while none of the directors of career services in 985 and 211 universities consider

employment difficulty as a potential reason for their students' entrepreneurial decisions.

One of the most significant characteristics of the present situation of Chinese college student entrepreneurship is the low survival rate (20-21%), which is reflected in the current survey data. In the 2013-2014 academic year (one year prior to our survey), the survival rate of graduate entrepreneurship was 53.62%. If compared with findings regarding general entrepreneurial activities, the survival rate of college graduate entrepreneurship was relatively low.

Figure 4. Survival of Entrepreneurship by Region and Institutional Tier



No significant difference exists in the enterprise survival rate among regions, of which the rates were lower in the eastern (51.17%) region. The one-year survival rate of entrepreneurship enterprises for graduates from the 211 colleges was 64.75%, which was significantly higher than those of the other colleges and universities. However, in terms of the perceptions of the self-employment enterprise survival rate from the directors of career services, the entrepreneurship rates in the western region and general undergraduate and higher vocational colleges are even lower. There are some discrepancies of disaggregated patterns in one-year survival rate and in perceived high survival rate, which is due to the possibility that directors' degree of agreement of high survival rate may be based on their perceptions of the survival rate over a longer period.

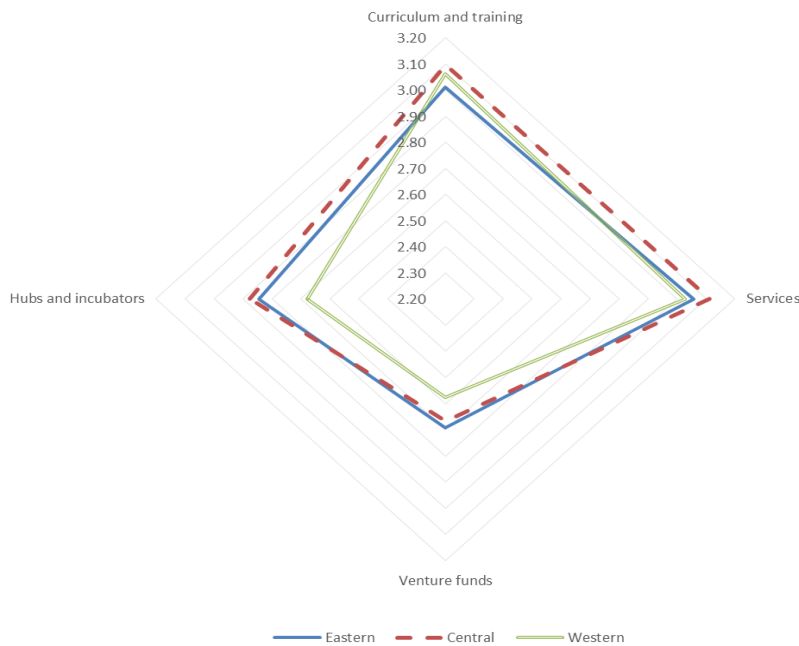
The practices of colleges and universities to promote graduate entrepreneurship mainly include the following four aspects. First, entrepreneurship coaching courses and training programs have been set up to cultivate the self-employment awareness of college students and improve entrepreneurial skills. Second, venture funds have

been provided to alleviate the pressure of acquiring venture capital. Third, business incubation parks and entrepreneurial bases have been established. Fourth, convenient conditions have been created for college student entrepreneurship, to provide consultations or solutions for entrepreneurship policies, give preferential policies to keep roll and credit for self-employed college students, and hold entrepreneurship contests. The questionnaire hopes that the directors of career services will make subjective evaluations on campus practices from four dimensions, i.e. for the institutional emphasis, actual resource support, student attention, and the directors' satisfaction. The evaluation is designed in the form of a Likert four-class scale. The higher the score, the better the work practice will be. For each aspect of practices, we construct a single measure by averaging the scores of its four dimensions.

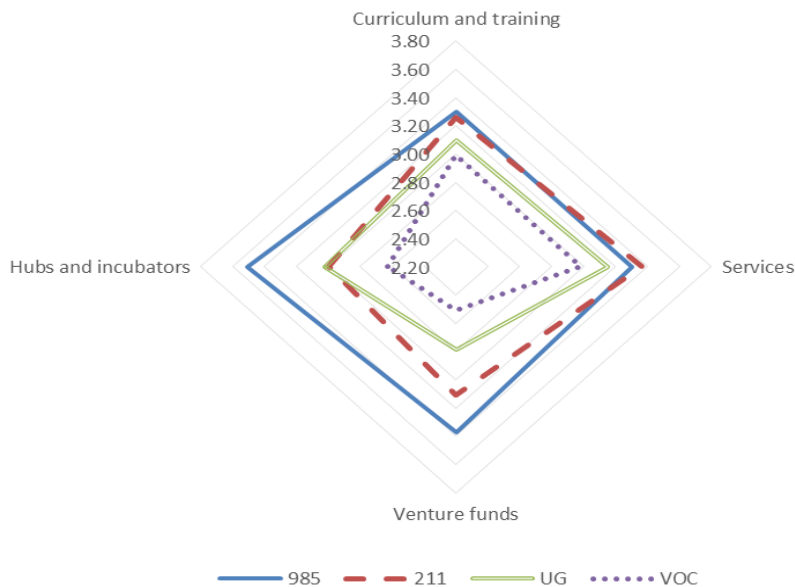
As displayed in Table 2, the mean scores of the entrepreneurial curriculum and training (3.04) and entrepreneurship service work (3.07) are higher, while those of venture funds (2.66), and entrepreneurship hubs and incubator bases (2.82) are lower. In terms of some objective measures for the four aspects of institutional practices in promoting college graduate entrepreneurship, on average there are, 2.1 entrepreneurship courses, 3.27 entrepreneurial services are provided per college/university, 7.97 projects incubated, and each entrepreneurial project is funded with about 31.4 thousand Yuan RMB (equivalent to \$5,000 USD). According to the perceptions of directors of career services, most (78.5%) agree funding shortages are the obstacles for college student entrepreneurship. This confirms previous findings that, currently, funding shortages are the most common problems for college students in China's various regions to find self-employment (Chu & Chang, 2008; Zhang, Kang, & Ding, 2010)

If comparing the institutional practices that encourage college student entrepreneurship among regions, the practices of institutions in eastern regions are, in general, superior to those in central and western regions. Practices in western regions lag behind, particularly in terms of venture funds and hubs and incubators (Figure 5, Panel A). The comparisons, by institutional tier, display a pattern that is significantly in favor of the 985 universities and is against vocational colleges (Figure 5, Panel B), particularly in venture funds and hubs and incubators.

Figure 5. Perceived Quality of Institutional Practices to Promote Entrepreneurship
Panel A | Perceived Quality of Institutional Practices, by Region



Panel B | Perceived Quality of Institutional Practices, by Institutional Tier



Conclusion and Discussion

Based on data from the institutional survey of directors of career services at 881 Chinese colleges and universities, conducted under the project of “Policies promoting the employment of college graduates in China” performed by the Graduate School of Education’s Institute of Economics of Education at Peking University, this study analyzes the current entrepreneurship status of graduates from China’s colleges and

universities, and the practices of colleges and universities to promote student entrepreneurship.

The main findings achieved are as follows.

1. Although China's college graduates have a high level of entrepreneurial interest, the entrepreneurial intention and actual entrepreneurship population is low, and the entrepreneurship survival rate is not high.

2. The opportunity entrepreneurship and necessity entrepreneurship of college graduates account for 72% and 28% of the total, respectively. The proportions of opportunity entrepreneurship from the 985 universities and 211 universities are higher, as are those of necessity entrepreneurship from general universities and higher vocational colleges.

3. For institutional practices that promote entrepreneurship of college graduates, the 985 and 211 universities provide relatively wider and deeper support, particularly in terms of college student entrepreneurs' access to financial resource and incubation infrastructure. Vocational colleges and institutions in western China are at a disadvantage in these aspects.

To help promote entrepreneurship for college students, this study offers the following opinions and suggestions:

Firstly, ad hoc promotion of immediate entrepreneurship after graduation without sufficient support should be cautious. Instead, the cultivation of innovation spirit at colleges should be encouraged. Our study shows that, although present Chinese college students are more and more interested in entrepreneurial activities, the percentages of those who have serious entrepreneurial intentions and who take actual entrepreneurship, as well as the survival rate of college graduate entrepreneurship, are still low. On the one hand, it reveals the potential opportunity for government and higher education institutions to encourage college students to pursue entrepreneurship. On the other hand, it implies the lack of entrepreneurial support and lack of innovation spirit could be among the reasons for the low rate of successful entrepreneurship of college graduates in China. The comparative advantage of higher education institutions lies in cultivating students' spirit of innovation and helping them achieve through appropriate channels, including entrepreneurship. The on-campus guidance and support of college student entrepreneurial activities,

particularly those who could be beneficial to students' future entrepreneurial success, can be strengthened.

Secondly, opportunity entrepreneurship should be encouraged, and attention should be given to necessity entrepreneurship. The encouragement of opportunity entrepreneurship can bring more jobs so as to fuel economic growth. At present, opportunity entrepreneurship is the main type of college student entrepreneurship, however, about one-third of college students' entrepreneurship is necessity entrepreneurship, especially for students in the western region and higher vocational colleges. Therefore, graduates who become self-employed due to necessity should focus on finding better employment opportunities, and these students should be provided with employment support from higher education institutions.

Third, governmental support for college graduate entrepreneurship should be based on actual needs to avoid flashy "face projects". Different types of college graduates have different entrepreneurship statuses and various characteristics of campus practices, thus leading to different development. For example, the western region and general colleges and universities rarely receive funding support, while the eastern region and 985 colleges and universities have strong abilities to absorb market funds to encourage student entrepreneurship. In terms of relevant practices in colleges and universities, entrepreneurship coach training and service works have been carried out successfully. But college students have more urgent demands for funding support and startup hub hardware construction. Therefore, institutional practices should follow differentiated rather than a unitary model to promote student entrepreneurship, and pure imitation of the "flagship" model only "looks good", but would be detrimental to student entrepreneurship in the long run. The government could encourage some top tier colleges and universities to improve the function of startup hubs and incubation bases, and to promote startup hubs to provide help and support for college student entrepreneurial projects. At the same time, the government can help college students in the western region reduce financial lending barriers, broaden the channels of funding sources, and absorb market and social idle funds to participate in startup hubs and incubators.

In sum, this study contributes to the current literature by promoting the overall understanding of the current status of college student entrepreneurship in China. It is unique because: 1) our measures of college student entrepreneurship involve all stages of entrepreneurial activities; 2) we combine objective and subjective measures of college student entrepreneurship to provide mutually consistent patterns of college student entrepreneurship in China; and 3) our sample is nationally representative and our inference is generalizable.

Our study has some limitations as well. Our study is a descriptive one, in which we delineate the pattern of college student entrepreneurship in China, but do not examine empirically on what the reasons are for lower entrepreneurship among college students and why it differs across regions and institutional tiers. We admit that many factors determining college student entrepreneurship, such as individual student characteristics and exposure to entrepreneur/business education at secondary level, cannot be examined due to a lack of data. Further studies can control for the above-mentioned factors and examine how governmental policies and institutional practices can affect college student innovation spirit and entrepreneurship.

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