Why Graduates Can't Find Jobs in a Soaring Economy: Rent-Seeking Migration of College-Educated Young Workers in China

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Preliminary Draft. 12/2007

Abstract

This paper studies the impact of regional inequality on the spatial distribution of college-educated young workers in China. Since the labor market is spatially segmented, secure jobs in large cities come with economic rents in terms of better compensations and access to high-quality local public services. The marketized reform of the socialist college placement system in 1997 has paved the way for educated young workers to seek these economic rents through migration. Based upon evidence from China 2000 census and 2005 placement information of a college, We argue that competitive rent-seeking incentives not only lead to talent relocation to China's rich coastal cities, but also contribute to high graduate unemployment rate and heavy investment in post-graduate education.

1 Introduction

This paper studies the impact of regional inequality on the spatial distribution of educated young workers in China using evidence from 2000 census and 2005 placement information from a college. Since the labor market is spatially segmented, secure jobs in large cities come with economic rents in terms of better compensations and access to high-quality local public services. The marketized reform of the socialist college placement system in 1997 has paved the way for educated young workers to seek these economic rents through migration. We argue that competitive rent-seeking incentives not only lead to talent concentration in China's rich coastal cities, but also contribute to high graduate unemployment rate and heavy investment in post-graduate education.

There are two types of economic rents associated with secure jobs in large Chinese cities. The first is what I call *Todaro rent*. Todaro (1969) and Harris and Todaro (1970) argue that a rural-urban wage gap can be created by wage rigidity in the urban sector. Unskilled migrants are not allowed to compete with workers in Chinese urban formal sector. Firms in this sector are expected to abide by minimum wage regulations and labor standards. Even local residents may have difficulty entering certain firms if they do not have the connections. These factors help maintain wages in the urban formal sector above the market-clearing level. Consistent with this argument, Park et al (2007) notice that real urban wages steadily increased after 1997 even when state enterprise restructuring was at its high point and urban unemployment rate reached its peak.

The second type of economic rent is associated with the local registration status (*hukou*). In China, legal urban residents, especially those born in large cities, enjoy local government benefits and policy favors unavailable to other Chinese citizens. As a result, migrants from the countryside or small cities can capture huge economic rents if they can obtain the large-city *hukou*. The government has a tight control on the total number of *hukou* awarded to migrants each year. Under the Chinese system, migrants without college

education have little chance to obtain the quota. The enhanced prospect to obtain large-city *hukou* significantly increases returns to college education for non-metropolitan residents. This adds to already high monetary return to college education in China, which is found to be about 37.3% higher than senior high school graduates in 2001 (Zhang et al 2007).

It is important to distinguish the rent-seeking migration we study from other types of migrations. Even though unskilled migration is also driven by an income gap, this is not a rent-seeking process. Unskilled rural migrants mainly work in the urban informal sector, which is not spatially segmented and the wage is competitively set in a national labor market. The government almost never offers local *hukou* to unskilled migrants. They are thus denied entitlement to local public services and social welfare plans. As a result, their migration tends to be seasonal and temporary.

Before the college expansion in 1999, high school graduates seek the rent through the competitive national college entrance test. Because the government kept tight control of the quota of college students, it is impossible for people to engage in excessive rent-seeking activities through investing in college education. The demand for college is suppressed before college expansion.

Reforms of the high education finance and placement system during the 90's have two important consequences. The government is no longer responsible for graduate placement. And it is less responsible for school's finance. This completely rid the government of the incentive to keep tight control of the size of the student body. This economic calculation is the deep rationale behind the government's college expansion policy.

As a consequence, young graduates from outside of the large cities compete with each other for rents created by market segregation. Because both types of rents are associated with secure jobs in the large cities, they may engage in prolonged job searches in large cities, and they may have strong incentives to invest in post-graduate education which helps their job searching, even when the number of positions far exceed the number of graduates. High

incentive to invest in higher education and high graduate unemployment rate can be both sustained as an equilibrium so long as spatial segregation exists, diverting a great amount of economic resources to unproductive rent-seeking activities. It also considerably reduces the efficiency of the Chinese economy.

Our theoretical argument is similar to the one expressed in Todaro (1969) and Harris and Todaro (1970) that rural-urban wag gap induces rural migration, which can be deterred only by high enough urban unemployment rate. Our contribution also lies in applying this well-known framework (see also Fan and Stark 2007) in a novel institutional setup to explore new economic problems. There are extensive media coverage and policy discussions on both graduate unemployment and educated migration (or brain drain) within China, especially in recent years. No relevant research is mentioned in the comprehensive survey of the Chinese labor market by Park et al (2007). One reason is that this issue became prominent only a few years ago.

Section 2 briefly introduce the graduate labor market in China. In section 3 we introduce the national trend. In section 4 we provide evidence based upon a college. Section 5 concludes.

2 Graduate Labor Market

In this section we introduce the basics of the college graduate labor market in China. Bai (2006) describes the background and consequence of the rapid higher education expansion since 1999 in greater details.

Until the end of 1990s, university education in China is free and jobs are assigned by the government. From 1978 to 1998, tertiary student enrolment increased from 0.86 to 1.08 million (Bai 2006). Access to college is largely based upon the highly competitive national college entrance test scores. For students from rural area or poor inland provinces, college education means guaranteed jobs and better life in the developed regions and/or large cities. Given China's tight control on internal migration through the household registration system (or *hukou*), migration through college education is almost

the only legitimate option for young Chinese from disadvantaged regions.

In 1999, the government suddenly expanded the enrolment to 1.59 million, presumably as a measure to boost domestic consumption in the eve of the 1997 Asia financial crisis. The breakneck expansion continued. By the end of 2004 the number of students enrolled in China's higher education institutions reached 20 million, the largest in the world (Bai 2006). This created massive educated unemployment starting from 2003. Reported unemployment rate ranged from about 30% (for 2003 and 2004, reported by the Ministry of Education) to 60% (for 2006, reported by the National Development and Reform Commission).

In 1997, the government stopped assigning jobs and started charging students fees for college attendance. A national labor market for college graduates quickly emerged. Even though the government no longer automatically offers *hukou* to migrant graduates, it still maintains a migration policy mainly based upon education. Migrant college graduates can at least get a pseudo green card which gives them official rights to most local privileges including social welfare. This is not a real green card because it does not lead to urban citizenship (*hukou*). Even though in practice the real benefit of this card is highly questionable, as the Education Commission of Shanghai Municipal Government admits in a statement, such policy favor is not available to those migrants without college education.

3 High Return to College: Migration and Hukou

We first provide a broad trend of young graduate migration using Census 2000 data. We focus upon those people in the age range of 24-40 at the survey year who have completed schooling. There are 302156 observations. Table 1 summarizes this data.

We define migrants as those whose birth province is not his or her residential province at the time of the survey. This definition ignores migration

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within the same province. From Table 1 we can see that more educated people are more likely to migrate. This is particularly true for college-educated people. The rate of migration for people below high school and with high school does not differ much. The migration rate of college-educated people are 50% higher than that of high school graduates.

College graduates are also more likely to get local hukou, especially in the cities. Table 2 tabulates the local hukou status of the migrants. About 60% new metropolitan hukou (defined to be Beijing, Shanghai, or cities in Guangdong) are given to college-educated migrants, who only make up 11% of the migrant sample. Almost no college-educated migrants get rural hukou.

More formally, we use the following probit regression specifications.

$$\Pr(Migration_{ij}) = \alpha_0 + \alpha_1 \boldsymbol{X_{ij}} + \epsilon_{ij} \tag{1}$$

where Migration is the binary outcome of migration (with migration coded as 1), LogAvgGDP is the Log GDP per capita of one's birth province, Birthyear is the year when the person was born. HighSchool and College are both binary dummies of senior high school and college schooling level. Other control variables include sex and its interaction with schooling levels.

The first column of Table 5 focuses upon the binary migration choice. It confirms the existing findings that young age, poor background, and high education increase the likelihood of migration. What we are interested in is the difference between high school education and college education. The coefficient of college education is about 3 times larger than the corresponding coefficient for high school education. The difference is statistically significant. So college education dramatically improves a person's mobility.

The other 3 columns in able 5 reports a similarly-specified multinomial logit regress for local hukou status of the migrants. Comparing the coefficient of college education and high school education, we can see that college-educated people are dramatically more likely to get urban hukou, especially those in the big cities. They are about 6 times less likely than high school graduates to get the rural hukou. They are about 26% more likely than

high school graduates to get hukou of towns and small cities, and they are about 88% more likely to get metropolitan hukou. While older migrants are more likely to get local hukou, the interaction of schooling and birthyear suggests that college-educated migrants get local urban hukou quicker than high school graduates.

4   Rent-seeking Activities of College Graduates

We use data from the student administrative database of an elite college in Shanghai, 2005. We focus upon a sample of 1718 graduates whose records are most complete.[1] Table 3 contains the summary statistics.

In our sample, 44.9% of the graduates live in Shanghai before college. This rate jumps to 82% when they graduate. About 46% of the graduates choose not to live in their pre-college province of residence. They are defined as migrants in our analysis.

Females constitute 64.4% of the sample. Most of the students (88.5%) come from an urban family. The vast rural population in China are under-represented in many colleges. About half of the graduates have at least one parent affiliated with the ruling communist party. This is also much higher than the national rate.

Graduates in our sample come from 273 prefectures of 27 provinces.[2] The average GDP per capita of these 273 prefectures in 2002 is 10813 *yuan*, which is roughly US$ 1300. Because close to half of our sample are students from Shanghai, which has one of the highest GDP per capita values in China, the average graduate home prefecture GDP per capita is as high as 23488 *yuan*. There is huge regional inequality. Shanghai is about 12.5 times richer than

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[1]This is about 80% of the student body. There is no evidence of systematic sample selection bias.

[2]We do not further divide province-level cities (Beijing, Shanghai, Tianjin, and Chongqing) into prefectures in our analysis.

the poorest prefecture in our sample, which has a GDP per capita of only 2389 *yuan*, or US\$ 288, in 2002.

We obtain the information on post-college career and residence from the placement database, which is compiled when graduates leave the school. This information is then checked and supplemented with independent information from the Univeristy *Dang'an* Office. The Chinese government keeps a cumulative confidential dossier (called the *dang'an*) for every college student. Soon after students graduate, they need to follow formal procedures to request the dossiers to be sent to where they live. Information from these two different sources is consistent with each other (details not shown here). The information on post-college residential choices of those unemployed graduates only appears in the *dang'an* data.

We consider four types of post-college career choices: working full time with a job, looking for a job, continuing education in China, and continuing education abroad. For Shanghai locals (whose pre-college residence of place is in Shanghai), we consider three types of post-college residence types: living in Shanghai, living in a different province, and living abroad. For non-locals, we consider four types of post-college residence types: living in Shanghai, living in his/her pre-college residence of province, living in a third province, and living abroad. Table 4 summarizes the post-college career and residence information of our sample. It is divided into two parts, with the top portion summarizing the sub-sample of Shanghai locals, and the bottom portion summarizing that of non-locals.

Comparison of the locals and non-locals in Table 4 strongly suggests the high value of living in Shanghai. The number of local graduates living in Shanghai and a different province is respectively 745 and 3. The number of non-local graduates living in Shanghai, pre-college residence of province, and a third province is respectively 627, 178, and 88. Shanghai is clearly the most popular post-college place of residence for all graduates in our sample. This is not only true for those migrants who have a job, but also true for those unemployed migrants, and for migrants who choose to pursue a higher degree

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in China. 67 out of all 103 unemployed migrants look for a job in Shanghai. In fact, migrants are over-represented in the unemployed sub-sample. They are about 3 times more likely than the locals to be unemployed upon graduation.

Migration of graduates is heavily regulated and does not follow simple economic logic of compensation inequality. Migration to Shanghai, where non-locals graduates went for college, is more tolerated than migration to other provinces, even if these provinces may be as developed as Shanghai is. In fact, there are many cities in our data which have higher GDP per capita than Shanghai. Nevertheless, only 88 out of all 936 non-Shanghai graduates choose to migrate to a different province. This also explains why graduates are so reluctant to go to a different Chinese city for graduate schools.

Table 6 reports probit regression results of migration using the college administrative data. Column 1 shows that graduates from richer cities/prefectures are more likely to live in the province of their pre-college residence. This result, however, is driven by the sub-sample of Shanghai locals who predominately choose to live in Shanghai. So we focus upon the those graduates who do not live in Shanghai before college. Column 2-4 reports their migration choices. Column 2 shows that non-Shanghai graduates from poorer cities/prefectures are more likely to live in Shanghai after graduation. And graduates with better college GPA are more likely to do so. Column 3 shows that, being unemployed does not significantly reduce graduates' desire to migrate to Shanghai. The coefficient for the binary unemployment status variable $Unemployed$ in Column 3 is positive and statistically insignificant. Column 3 shows that, those who go to graduate schools in China are far more likely to choose a school in Shanghai. The coefficient $PostGradCHN$ is positive and significant. This is despite the fact that other Chinese cities also have many graduate programs of comparable quality, and that the admission to graduate schools in China overall is very competitive. Results in column 1-4 are consistent with our view that rent-seeking incentive is behind migration.

We can use multinomial logit regression to study the impact of hometown

GDP per capita on graduates' incentive to engage in various types of rent-seeking activities. We consider five different types of rent-seeking activities.

- Category 0: not migration;

- Category 1: migration with a job;

- Category 2: migration without a job;

- Category 3: migration through further education in China;

- Category 4: migration through further education abroad.

We expect graduates from poorer cities/prefectures to prefer category 1 over category 0, because rent-seeking though category 1 does not involve much additional cost. Rent-seeking through category 2-3 is costly. Migrants without a job mainly face opportunity costs. Migration through further education, especially through education abroad, also involves direct cost of tuition, travel, and other expenses. The theory prediction is not clear for these categories. Graduates from poorer prefectures certainly have higher incentive to seek rent in Shanghai and other decent places, nevertheless they have more limited resources and face credit constraint to engage in such rent-seeking activities. Among category 2-4, the cost of rent-seeking is most likely to dominate the benefit of rent for category 3, and least likely for category 2.

Table 7 reports the result of our results. Category 0 is the base outcome of no migration or no rent-seeking activity. Non-Shanghai graduates from poorer cities/prefectures are more likely to engage in the rent-seeking activity as employed workers, as job seekers, or as graduate school students in China. For category 4, it is the graduates from richer prefectures who are more likely to take this option. The difference between the GDP per capita coefficients for category 1-4 is in favor of our discussion in the preceding paragraph, though the difference is not significant for category 4.

5 Conclusion

This paper studies the impact of regional inequality on the spatial distribution of educated young workers in China. Since the labor market is spatially segmented, secure jobs in large cities come with economic rents in terms of better compensations and access to high-quality local public services. The marketized reform of the socialist college placement system in 1997 has paved the way for educated young workers to seek these economic rents through migration. We argue that competitive rent-seeking incentives not only lead to talent concentration in China's rich coastal cities, but also contribute to high graduate unemployment rate and heavy investment in post-graduate education.

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Table 1: Summary statistics of census 2000 data

Variable	Mean	Std. Dev.	N
Female	0.485	0.5	302206
High School	0.159	0.366	302206
College	0.067	0.251	302206
Birthyear	1968.066	4.11	302206
AvgGDP	12806.914	6399.943	302156
Migration (all)	0.08	0.272	302206
Migration (below high school)	0.074	0.262	233779
Migration (high school)	0.089	0.285	48092
Migration (college)	0.133	0.339	20335

Table 2: Local hukou status of migrants

| | Local Hukou Status | | | | |
| | No | Rural Hukou | Urban Hukou | | Total |
Schooling			towns/small cities	metropolitan	
Primary or less	3,768	1,418	110	13	5,309
Junior High	8,926	1,777	1,182	100	11,985
Senior High	2,382	202	1,463	230	4,277
College or higher	1,144	12	1,077	469	2,702
Total	16,220	3,409	3,832	812	24,273

Data source: China census 2000 1% sample.

Table 3: Summary statistics of the college data

Variable	Definition	Mean	S.D.	N
Shanghai	Pre-college residence in Shanghai	0.449	0.498	1718
MigrateSH	Post-college residence in Shanghai	0.820	0.384	1718
Migration	Pre/post-college residence of province differs	0.463	0.499	1718
Female	Gender is female	0.644	0.479	1718
ParentCCP	Parent Communist Party member	0.502	0.5	1718
FamilyUrban	From an urban family	0.885	0.319	1718
GPA	College grade point average	3.021	0.446	1718
AvgGDP	GDP per capita of home prefecture	23488	16263	1718

Table 4: Post-college career and residence outcomes: Shanghai locals v.s. non-locals

Residence	Career					
	Employed	Unemployed	Edu China	Edu Abroad	NA	Total
Locals						
Shanghai	678	23	40	0	4	745
Non-Shanghai	2	1	0	0	0	3
Abroad	0	0	0	24	0	24
Total	680	24	40	24	4	772
Non-locals						
Shanghai	402	67	124	0	34	627
Home Province	129	26	3	0	20	178
Another Prov	66	10	10	0	2	88
Abroad	0	0	0	53	0	53
Total	697	103	137	53	56	946

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Table 5: Probit and multinomial logistic regression results of Census 2000.

	Model I	Model II		
		1	2	3
LogAvgGDP	-0.339**	0.717	0.909**	0.636**
	(0.117)	(0.509)	(0.351)	(0.219)
Birthyear	0.025***	-0.099***	-0.131***	-0.133***
	(0.004)	(0.007)	(0.009)	(0.031)
HighSchool	0.273***	-0.511**	1.253***	1.774***
	(0.047)	(0.227)	(0.151)	(0.316)
College	0.642***	-3.028**	1.574***	3.206***
	(0.051)	(1.073)	(0.221)	(0.459)
HighSchool × Birthyear	-0.012**	-0.020	0.048***	0.056*
	(0.004)	(0.020)	(0.010)	(0.033)
College × Birthyear	-0.028***	0.110	0.089***	0.086**
	(0.004)	(0.106)	(0.016)	(0.039)
Female	-0.147	-4.307***	-0.638	-0.429
	(0.128)	(1.127)	(0.448)	(0.645)
likelihood				
	All	All Migrants		
N	302156	24223		

Data source: China census 2000 1% sample.

Model I is a probit regression with *migration* as its dependent variable. Model II is a multinomial logistic regression with *hukou* as its dependent variable.

Variable definition: *migration* = 0, 1 (0 = not migration, 1 = migration); *hukou* = 0, 1, 2, 3 (0 = without local hukou, 1 = with local rural hukou, 2 = with local urban hukou (towns and small cities), 3 = with local urban hukou (large cities). 0 is the base outcome.)

Standard errors adjusted for intragroup correlation at the birth prefecture level. Level of significance: * 0.10,** 0.05, *** 0.001.

Table 6: Probits regression results of migration

	All	Non-Shanghai		
	(1)	(2)	(3)	(4)
LogAvgGDP	-0.260***	-0.174**	-0.149**	-0.114*
	(0.063)	(0.069)	(0.073)	(0.069)
Shanghai	-2.587***			
	(0.086)			
Unemployed			0.012	
			(0.159)	
PostGradCHN				0.716***
				(0.174)
GPA	0.274**	0.364**	0.384**	0.332**
	(0.132)	(0.127)	(0.148)	(0.137)
Female	0.022	-0.099	-0.211*	-0.107
	(0.117)	(0.102)	(0.116)	(0.108)
FamilyUrban	0.039	0.107	0.081	0.116
	(0.133)	(0.128)	(0.142)	(0.138)
ParentCCP	0.102	0.057	0.130	0.113
	(0.075)	(0.086)	(0.094)	(0.090)
PseudoR2				
N	1718	945	699	836

Data source: a college administrative database in Shanghai, 2005.

Model I is a probit regression with *migration* as its dependent variable. Model II-IV is a probit regression with *migrationSH* as its dependent variable. Model III only considers non-Shanghai graduates on the labor market. Model IV only considers non-Shanghai graduates who do not go abroad.

Variable definition: *migration* = 0, 1 (0 = not migration, 1 = migration); *migrationSH* = 0, 1 (1 = migration to Shanghai, 0 otherwise).

Other control variables are major dummies. Standard errors adjusted for intragroup correlation at the major level. Level of significance: * 0.10, ** 0.05, *** 0.001.

Table 7: Multinomial logistic regression results that non-Shanghai graduates from poorer provinces are more likely to participate in rentseeking migration: dependent variable *rentseeking*

| | All non-Shanghai Graduates | | | |
	1	2	3	4
LogAvgGDP	-0.575***	-0.786***	-0.622***	0.367*
	(0.141)	(0.200)	(0.178)	(0.201)
GPA	0.619**	-1.184***	5.164***	-0.185
	(0.238)	(0.350)	(0.710)	(0.450)
Female	-0.236	0.089	-0.778**	0.926*
	(0.219)	(0.368)	(0.312)	(0.512)
UrbanFamily	0.001	-0.332	0.265	0.861
	(0.294)	(0.402)	(0.349)	(0.597)
ParentCCP	0.094	0.149	0.002	0.048
	(0.177)	(0.313)	(0.276)	(0.327)
PseudoR2				
N		946		

(0 is the base outcome)

Data source: a college administrative database in Shanghai, 2005.

Variable definition: *rentseeking* = 0, 1, 2, 3, 4 (0 = not migration; 1 = migration with a job, 2 = migration without a job, 3 = migration through further education in China, 4 = migration through further education abroad.)

Other control variables are major dummies. Standard errors adjusted for intragroup correlation at the major level. Level of significance: * 0.10, ** 0.05, *** 0.001.