Employment in China's Fast Growing Region: What Can We Learn from It to Make Employment Expansion Keeping Up with Economic Growth?

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Abbreviations

FGR: Fast Growing Region
SOE: State Owned Enterprise
CULS: China Urban Labor Survey
IC: Investment Climate
NBS: National Bureau of Statistics
ILO: International Labor Organization
WTO: World Trade Organization
CASS: Chinese Academy of Social Sciences
TFP: Total Factor Productivity
FD: First Difference
FE: Fixed Effect

I. Introduction

Despite the overwhelming severity of mass lay-off and unemployment and drop of labor force participation in the entire urban China since the late 1990s, two facts have been observed by scholars. First, the employment in urban area has always expanded in a rather rapid way during the period that is considered the most difficult time of labor market. Second, the growth of urban employment is uneven among regions characterized as the fast-growing region contributing much more to overall employment expansion than moderate-growing region.

The increase in unemployment rate and decrease in labor participation cause many to have the impression that there has been no increase in employment in China since the 1990s, or even there has been absolute decrease in employment. For example, Rawski (2001) takes "zero employment increase" as evidence to question on China's GDP growth performance after the late 1990s. If we just observe the state and urban collective sectors that were traditionally only absorbers of urban employment, the employment has indeed declined year by year since the latter part of 1990s, as is shown in Figure 1. However, because the components of China's economy become diversified, the employment structure experienced huge changes. Only changes in unit employments in state and urban collective sectors could no longer fully reflect changes in total employment.

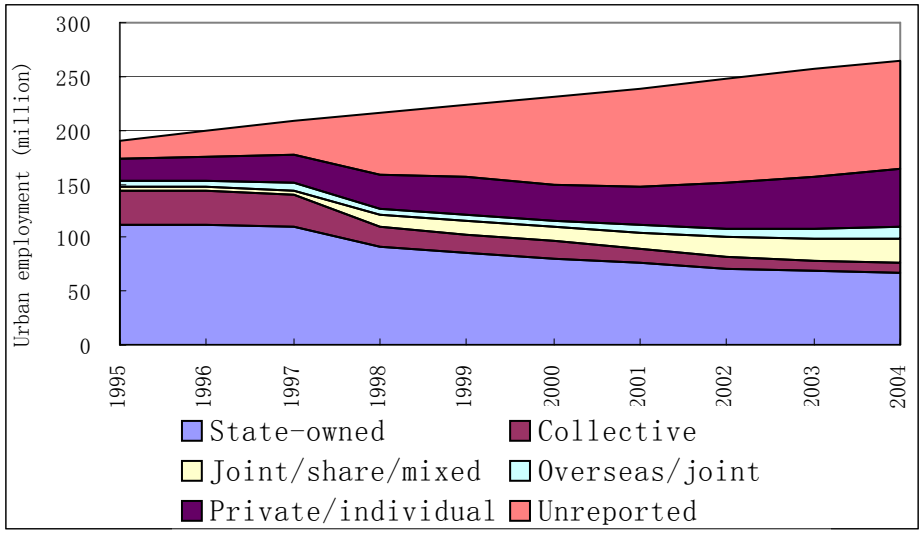


Figure 1 Changes of Urban Employment

Source: *China Statistical Yearbook*, various years.

Expansion of employment however is uneven among regions in the overall progress (Fox and Zhao, 2002). As is shown in Figure 1, if we exclude the increased employment number unreported (83.16 million) from the total number of urban employment (74.32 million), the increase of the rest part (i.e. unit employment) was in fact negative. The only region with positive increase of urban employment, if we observe employment expansion of the three macro-divided regions – Western, Central and Eastern regions, was the east – i. e., 4.58 million during the period. As a result, the share of Eastern region's urban employment in the entire country increased from 44.18 percent in 1995 to 49.86 percent in 2004, and the share of Eastern region's non-agricultural employment in the country increased from 46.95 percent in 1995 to 48.22 percent in 2004. By employing a non-parametric estimation method (LOWESS) to examine the employment growth performance against economic growth performance, we can clearly see the positive correlation between the two performances (Figure 2).

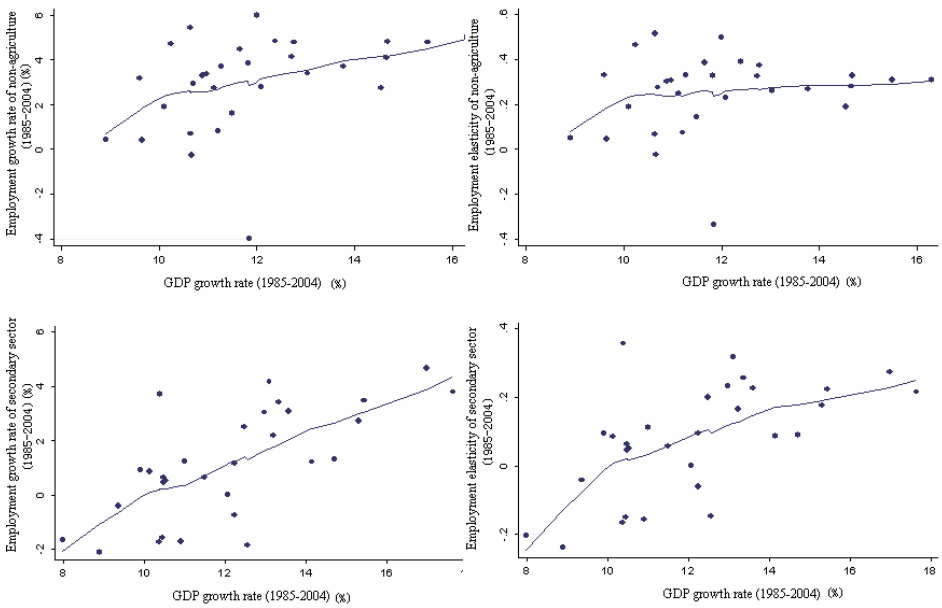


Figure 2 Relationship between GDP Growth and Employment Growth

Source: calculated by data from *China Statistical Yearbook*, various years.

Because the total number of urban employment has been increasingly greater

than the summation of sectoral employments since 1990 and the total of urban employment cannot be proportionally identified in each of the provinces, the provincial data of total urban employment, therefore, are not the numbers of actual employment. For that reason, instead of using employment data in the period of 1990 to 2004, we use the employment data in the period between 1985 and 2004 to examine the relationship between economic growth and expansion of non-agricultural employment. Figure 2 depicts the employment growth rates of non-agricultural sectors and secondary sector, and the employment elasticities of non-agricultural sectors and secondary sector, respectively. From the results, we find that the fast-growing provinces have had much better performance in generating employment opportunities than their moderate-growing counterparts do.

From the two observations described above, one can conclude that the fast-growing regions contribute more to the urban employment increase during the reform period, especially in the radical restructuring period[1]. That is, despite some scholars argue that the employment increase does not keep the same pace with economic growth in the past two decades[2], economic growth does create jobs for the laid-off, unemployed, and new entrants. This has at least two implications. Number one, as a common sense, a sustained economic growth matters to generate employment opportunities. Number two, the key issue is what kind of economic growth, and under what a growth climate, creates employment opportunities the most. This report tends to answer this question by analyzing the aggregated and micro survey data on China's urban labor market in transition period.

II. Data

In this report, we utilize data from various sources to depict the labor market developments in different regions. There are two categories of data used in this study: aggregated data at macro level and data at micro level. For each dataset, there coexist its superiority and drawback, so we have to use those datasets

[1] Some researchers divided China's urban reform into two phases: steady phase (1988-1995) and radical phase (1995-1999). They found that in the former phase, income inequality was mainly caused by the relatively higher income growth rate of some people; in the latter phase, income inequality was mainly due to the income decrease of some people caused by mass unemployment (Meng, 2004).

[2] For example, many researches show that, employment elasticity has decreased with the serious situation of labor market. This means that the employment increase does not keep the same pace with economic growth (Gong and Yuan 2002; Li, 2003).

complementarily so as to portrait an elephant instead of one trunk or ear.

Using data at macro level, mostly provincial data or national level data, we are going to identify the fast growing regions. The advantage of macro data is its comprehensiveness. It is good to believe that the macro data are helpful to identify the regional difference when existing disparities of development among regions. But the drawbacks of the macro data are obvious. First, the high aggregation of macro-level data makes it possible to bias labor market information sometimes. Second, too few indicators are available at macro level to reflect concrete situations of labor market. When analyzing and comparing the labor markets among regions, we have to make good use of data from sample surveys at individual, household, and firm level. Of course, the tradeoff exists since we have to sacrifice some variations among regions because only a few regions are selected in those sample surveys. Another disadvantage of using micro survey data is that regions usually are not randomly selected and the samples are not nationally representative, so we should be careful about drawing conclusion for whole country from those datasets but focus on comparisons between FGRs and other regions identified by macro data.

Macro data are mainly from published materials. Household and individual data include CULS1 and CULS2. Firm data refers to IC. See Table 1 for an introduction of the data used in this report.

Table 1 Introduction of Data

Dataset	Provincial Data	CULS1	CULS2	IC
Survey Title	Not Applicable	China Urban Labor Survey: first round	China Urban Labor Survey: second round	China Investment Climate Survey
Survey Year	Relevant years	2001	2005	2002
Level of data	Provinces	Households and Individuals	Households and Individuals	Firms
Sampling Strategy	Not Applicable	(i) Urban Household Sample Frame: Proportional population sampling approach was used to sample an average of 15 households in each of 70 neighborhood clusters, by making use of 2000 census to sample clusters and households. On average 10 households were interviewed in each community, with additional 5 for spares. (ii) Migrant Sample Frame: 2000 Census was first used to sample 60 communities. Once	(i) Urban Household Sample Frame: Proportional population sampling approach was used to sample an average of 15 households in each of 50 neighborhood clusters. On average 10 households were interviewed in each community, with additional 5 for spares. (ii) Migrant Sample Frame: Proportional population sampling approach was used to sample communities according to local population of street. In	Firms were randomly selected subject to a few constraints: (i)For manufacturing firms, the main plant is the unit to be covered, with a minimum of 20 employees. For the service firms, the entire (local) firm is the unit to be included, with a minimum of 15 employees. (ii) Size of firms selected in each sector was roughly proportional to actual distribution of firms among the selected sectors in ESO's

		a neighborhood was selected, the administrative records of the neighborhood committee were used to constructing a sample frame of all registered migrants in the neighborhood.	each community, 15 migration households were sampled, and 10 of them were interviewed.	provincial database of the universe of firms. (iii) Total firms selected for each city are subjected to quota predetermined for each of cities.
Sample Size	Not Applicable	In each city, 700 urban households and all the individuals in the households who are aged 16 and above were surveyed, and 600 individual migrants were surveyed	In 5 cities surveyed in CULS1, 500 urban households and all individuals in the households; in small sized cities, 3000 migrant households and all individuals within the households were surveyed	2400 firms in total sample; 800 enterprises are service and the rest are manufacturing
Regions Covered	All provinces	Shanghai, Wuhan, Shenyang, Fuzhou, Xian	Shanghai, Wuhan, Shenyang, Fuzhou, Xian, Daqing, Wuxi, Yichang, Benxi, Zhuhai, Baoji, Shenzhen	Dalian, Benxi, Changchun, Haerbin, Hangzhou, Wenzhou, Nanchang, Zhengzhou, Wuhan, Changsha, Shenzhen, Jiangmen, Nanning, Chongqing, Guiyang, Kunming, Xian, Lanzhou
Definition of	Pearl River Delta	Shanghai, Fuzhou	Shanghai, Fuzhou, Wuxi,	Hangzhou, wenzhou,

FGRs	and Yangtze River Delta		Zhuhai, Shenzhen	Shenzhen, Jiangmen
Advantage of Data	Sketch the whole picture of economic growth and employment growth among provinces	Detailed information of work history from 1996 to 2001; Possible to observe job turnovers by job; detailed information on employment shocks	Both local and migrant households were surveyed and more information for comparison; for 5 big cities, available for comparison with data collected 4 years ago	Available for observing labor demand, human resources practice at firm level.
Use in this study	Identify the fast growing regions (provinces/cities) with high economic growth rates and high employment growth rates	Comparison basis of CULS2	Describe labor market development and comparisons between FGRs and other regions; analyze trend, size, and features of informal employment among regions; explicate dynamics of labor market, such as job turnovers	Describe basic characteristics of firms and patterns of labor uses; Analyze labor demand of firms both in FGRs and in other regions;
Sources	Statistical Yearbooks	Institute of Population and Labor Economics, CASS	Institute of Population and Labor Economics, CASS	The World Bank

III. Features of Economic Growth in Fast-growing Areas

Several features of an economy can be identified as factors positively impacting the creation of employment opportunity. First, from macroeconomic point of view, the faster and healthier growth an economy can reach, the more job opportunities it can create. Secondly, a growth pattern that is friendly towards job creation helps an economy with its employment increase. Thirdly, a well functioning labor market is vital for an economy to absorb as many labor force in its growth process as it can. Finally, enterprises' characteristics related to their flexibility of production decision-making, market adjustment, management autonomy are the factors that make an enterprise the job creator but not the job destroyer. In this section, we discuss some of those features in a perspective of comparison between fast-growing region and others.

1. Identifying the Fast-growing Region

As is presented in Introduction, the provinces with higher growth rates perform better in growth of employment. People use different and relative identification to distinguish between fast-growing and other provinces, depending on the purposes of concerns. In this report, we adopt loosely defined criteria – the group of provinces whose performances in economic growth and employment expansion are above the average alike. In Table 2, we present the provincial GDP and non-agricultural employment as percentages of the nation's total in 1998 and 2004 and the growth rates of GDP and employment between the two years. We find the coastal provinces have much better performances in both economic growth and non-agricultural employment expansion. From the Table, one can be sure that in terms of the relative importance of economic and employment size and their growth, Southeast provinces are always in lead. Therefore, in our empirical studies, especially while using enterprises' data, we define the Southeast cities as fast-growing region (FGR).

Table 2 Growth and Employment Performances by Province (%)

	GDP share		Growth rate	Non-agricultural employment share		Growth rate
	1998	2004	1998-2004	1998	2004	1998-2004
Beijing	2.75	2.81	11.12	1.95	2.43	7.07
Tianjin	1.91	2.11	12.62	1.22	0.99	-0.27
Hebei	5.26	5.10	10.16	6.10	5.26	0.70
Shanxi	1.90	1.84	10.11	2.76	2.42	0.94
Inner Monglia	1.48	1.63	12.49	1.63	1.35	-0.02
Liaoning	4.73	4.57	10.09	4.04	3.59	1.18
Jilin	2.03	1.92	9.74	2.05	1.74	0.38
Heilongjiang	2.87	2.69	9.53	3.13	2.41	-1.26
Shanghai	6.47	6.65	11.25	2.08	2.17	3.96
Jiangsu	10.36	10.99	11.82	7.31	7.48	3.57
Zhejiang	5.97	6.43	12.10	5.42	6.59	6.58
Anhui	3.47	3.20	9.26	4.59	4.80	3.97
Fujian	3.32	3.27	10.44	2.94	3.16	4.47
Jiangxi	2.47	2.40	10.19	3.07	3.09	3.32
Shandong	8.19	8.71	11.87	7.59	8.01	4.10
Henan	4.99	4.81	10.08	7.20	6.82	2.26
Hubei	4.47	4.16	9.41	4.68	4.22	1.42
Hunan	3.20	2.99	9.48	4.92	4.70	2.40
Guangdong	9.87	10.38	11.67	7.76	8.09	3.89
Guangxi	1.73	1.60	9.28	2.98	3.26	4.70
Hainan	0.55	0.52	9.41	0.43	0.45	3.81
Sichuan	4.23	4.02	9.79	6.02	6.19	3.68
Guizhou	1.01	0.94	9.40	1.94	2.55	7.98
Yunnan	1.73	1.50	8.18	2.06	2.01	2.74
Tibet	0.14	0.14	11.49	0.10	0.14	9.61
Shaanxi	1.90	1.82	9.99	2.63	2.68	3.54
Gansu	1.35	1.26	9.47	1.70	1.60	2.16
Qinghai	0.24	0.24	10.98	0.31	0.37	6.30
Ningxia	0.28	0.27	10.33	0.38	0.44	5.70
Xinjiang	1.14	1.03	8.89	1.01	0.99	2.91

Source: Calculated by data from *China Statistical Yearbook*, various years.

We calculated simple and Spearman rank correlation coefficients between growth rates of GDP and non-agricultural employment in the period 1998 and 2004[3]. The simple correlation coefficient is 0.4087 and significant at 5 percent. The Spearman rank correlation coefficient is 0.3578 and significant at 10 percent.

[3] We dropped the outlier provinces, in which the non-agricultural employment growth rates between 1998 and 2004 were negative.

The results show that there exists positive relationship between growth rates of GDP and non-agricultural employment.

2. Growth Pattern

Growth pattern can be seen as what sources an economic growth depend on. In a traditional economy, economic growth mainly depends on natural resources, namely farmland, and the relative abundance of such resources is positively related to economic performance, keeping the other factors constant. While economic growth reaches a point, at which Rostow-typed conditions of take-off ripen, physical capital becomes vital to furthering the economic growth (Lewis, 1954; Rostow, 1960). In most of the European and North American developed countries, when they approached a development stage at which labor force became short, physical capital-based economic growth confronted its limitation, which requires a transformation from input-driven growth pattern to productivity-driven growth pattern. As a result of this transformation, total factor productivity grows fast and contributes a great deal to their economic growth. For example, being a role model of TFP-driven growth pattern, the growth of TFP in the United States contributed 52.5 percent to its economic growth in the period between 1948 and 1973 and 35.3 percent in the period between 1948 and 1996 (Hulten, 2000). In economies where fast demographic transition provides demographic dividend to economic growth characterized by abundant labor supply and high savings rate, typically in East Asian economies, the phenomenon of diminishing returns to capital has been defer (Bloom, et al., 2002), and the transformation of growth pattern came relatively late (Bhagwati, 1996).

The results of demographic transition, which has been accelerated by both state-imposed family-planning program and rapid socio-economic development, produced the potential opportunity for China to take advantage of demographic dividend in the mid 1960s, but only after the initiation of reform could the economic growth make use of the opportunity. During the reform period, the potential demographic dividend has been capitalized through trade liberalization, development of factors markets, and fast economic growth (Table 3). Taking total dependence ratio as proxy of the advantageous population structure, in the period between 1982 and 2000, each 1 percent of decrease in dependence ratio led to a 0.115 percent of growth in per capita GDP – that is, the decline in total dependence rate contributed one-fourth to the per capita GDP growth in the reform period (Cai and Wang, 2005). The fast-growing coastal provinces have enjoyed more demographic dividend.

Table 3 Demographic Features in Transition China

	Total population (million)	Population dependence ratio (%)	Share of working population (%)	Labor force participation rate (%)	Fixed asset formed as % of GDP
1978	962.6	69.3	59.1	71.6	38.2
1979	975.4	68.4	59.4	71.8	36.2
1980	987.1	66.9	59.9	72.5	34.9
1981	1000.7	65.4	60.5	73.0	32.3
1982	1016.5	64.0	61.0	73.7	32.1
1983	1030.1	62.6	61.5	73.7	33.0
1984	1043.6	59.5	62.7	74.0	34.5
1985	1058.5	56.5	63.9	74.1	38.5
1986	1075.1	54.3	64.8	74.0	38.0
1987	1093.0	52.4	65.6	74.0	36.7
1988	1110.3	52.1	65.8	74.8	37.4
1989	1127.0	51.2	66.1	74.7	37.0
1990	1143.3	50.3	66.5	85.9	35.2
1991	1158.2	49.8	66.7	85.5	35.3
1992	1171.7	50.8	66.3	86.0	37.3
1993	1185.2	50.8	66.3	85.8	43.5
1994	1198.5	49.9	66.7	85.2	41.3
1995	1211.2	49.3	67.0	84.9	40.8
1996	1223.9	50.2	66.6	85.6	39.3
1997	1236.3	48.8	67.2	85.2	38.0
1998	1247.6	47.1	68.0	85.0	37.4
1999	1257.9	46.5	68.3	84.8	37.1
2000	1267.4	46.1	68.4	85.3	36.4
2001	1276.3	42.6	70.1	83.1	38.0
2002	1284.5	41.7	70.6	83.2	39.4

Source: calculated by data from *China Statistical Yearbook* and *China Population Statistical Yearbook*.

The better economic performance in the fast-growing region benefits from TFP improvement no more than the moderate-growing region does, now that the sufficient labor supply and high savings rate sufficiently support its sustained growth in a certain period of time. The studies on China's TFP performance during

the reform period show that while TFP has been substantially improved during the reform period (Perkins, 2005), no significant superiority can be found in the fast-growing region in terms of TFP performance over its moderate-growing counterpart (Ye, 2002; Deng and Li, 2004). The fast-growing provinces have mainly taken advantage of abundant labor force and adequate capital investment to spur their rapid economic growth. Another evidence of the labor's contribution is that the reallocative effect takes lion share in China's TFP growth during the reform[4]. That is why the fast-growing region has had much better employment expansion record.

3. Characteristics of Enterprises

Judged by degree of marketization involvement, flexibility of operation in the market, and enjoyment of favorable policies, enterprises in fast-growing region have obvious advantages comparing to the other regions (Table 4).

Table 4 Characteristics of Enterprises: Comparison between FGRs and Others

	FGRs	Others	All
Years of firm since establishment (year)	11.5	15.7	15.0
Proportion of stock list companies (%)	4.0	2.8	3.0
Share of public ownership (%)	35.1	54.	51.3
Employment per firm (person)	583	532	541
Employment by labor demand			
Proportion of firms with abundant workers (%)	10.0	22.6	20.5
Proportion of firms with worker shortage (%)	8.0	7.6	7.7
Normal (%)	82.0	69.8	71.8
Employment by contract type			
Proportion of permanent workers (%)	30.7	55.3	51.2
Proportion of temporary workers (%)	59.9	35.8	39.8
Labor Flexibility: Manager's power on hiring, firing, and wage (%)	87.9	84.9	85.4
Years of Schooling of Staff (year)	30	34	33
Fraction of firms training workers (%)	10.6	11.8	11.6
Capital/Labor ratio (thousand yuan/person)	93.7	92.9	93.0
Sales income in 2002 (million yuan)	283.7	109.3	138.3
Sales income per capita in 2002 (thousand yuan/person)	336	176	203

[4] Cai and Wang (1999) estimated the 22 percent of the GDP growth rate during 1978 to 1998 can be attributed to labor transferring from low productivity-(agricultural) sector to higher productivity- (non-agricultural) sectors, whereas the unexplained residual of the growth left was only 3 percent.

Proportion of income from export (%)	23.2	5.6	8.5
Share of labor compensation in total costs (%)	11.8	19.6	18.3
Ratio of total tax to sales in 2002 (%)	5.49	7.56	7.21
Proportion of firms' income tax exemption/reduction (%)	28.3	22.4	23.3
Numbers of firms	400	2000	2400

Source: calculated by IC survey data.

The relatively late establishment of fast-growing region's enterprises has put them in a position in which they perform in a more market-oriented manner. First of all, there are higher proportion of firms in this region listing in stock market, which enables them act by rules of market force and reduces the arbitrariness of their decision-making. Secondly, the firms in this region are more likely to be non-publicly owned, which grants more autonomy to them in their operation, such as hiring and firing employees in a flexible way. Thirdly, the higher share of income generated by exports offers them better opportunities to embrace the international commodity market and harder financial discipline. Finally, more flexibility and/or policy favorableness can be found in their tax payment behavior, which somewhat is advantage that they can cease and enjoy.

IV. Job Creation in Fast Growing Regions

Since the reform initiated in the late 1970s, China has experienced unprecedented economic growth, which is one of the leading growth rates in the world during the period. Meanwhile, the employment growth is also very significant although employment compositions in terms of sector, ownership, and region have changed dramatically. In the introduction part of the report, we demonstrated that the most prominent employment growth has taken place in the region with fast growing economy. But those observations are only based on aggregated data that make it possible to sketch a whole picture of total employment at the price of missing individual characteristics. In this section we are going to analyze the employment features using micro level data so as to reflect diversified pattern of employment determinants, labor market outcomes, and returns to education among different labor markets. Beyond the facts we show, as what follows we also want to know what the policy implications can be drawn from those facts to labor market development.

1. Fast-growing Regions Provide More Job Opportunities

According to macro-level statistics, the fast growing regions are also regions with fast employment growth. Since the fast economic growth may provide more job opportunities, those regions are characterized by high labor market participation rates, high employment rates, and low unemployment rates. This is not only true to residents with local *hukou* but to those who migrated to FGRs for working. According to a new finding (Liu, 2006), in 2002 migrants working in the two fastest growing areas, Yangtze River Delta and Pearl River Delta, account for 44.6 percent of total labor who migrated from rural areas to cities in China as a whole.

CULS2 surveyed migrants in 12 Chinese cities and surveyed local households in 5 larger cities out of those 12 cities. CULS2 ask status of labor participation and employment in a standardized way that international criteria, such as at least one hour paid work in reference week, active job searching, and ability to reach the position are all satisfied. So we may calculate labor participation rates and unemployment rates in FGRs in comparison with other regions according to the standard definition.

Table 5 presents the results calculated from CULS2. If we consider working population as those aged of 16 and older, the labor force participation rate is about 66 percent in FGRs, about 9 percent higher than that in other regions. When we only concern the group of persons aged between 16 and 64, labor force participation rate in FGRs is 74.9 percent, 6.6 percent higher than that in other regions. While the labor force participation is high in FGRs, there is still lower unemployment rate than in other regions. The fact that human resources have been fuller used in FGRs than in other regions can be most reasonably attributed to by more job opportunities created by the outstanding economic performance in FGRs. That is, people with identical individual characteristics but living in FGRs have much more opportunities to work than their counterparts living in other regions, simply because of the regional effect. But before concluding anything, we now take this as a hypothesis and give a more detailed analysis on determination of labor market status with the survey data.

Table 5 Labor Participation Rates and Unemployment Rates

	FGRs	Others	All
Labor market participation rate: 16+ (%)	66.1	57.3	60.8
Male	75.4	66.5	70.0
Female	57.4	48.4	52.0
Labor market participation rate: 16~64 (%)	74.9	68.3	71.0
Unemployment rate (%): 16+ (%)	5.77	10.53	8.46
Male	5.57	9.89	8.05
Female	6.02	11.43	9.01

Source: calculated by CULS2.

2. Determinants of Labor Force Participation

We first look at the determinants of labor force participation for all adults aged 16 and above. In addition to a pooled regression, a linear probability model[5] is applied to the sample of FGRs and of other regions separately.

$$Partp_i = \beta' X + \gamma' Z + \varepsilon_i$$

The left hand side of the equation is whether the individual participate in labor market and the right hand side variables consist of two groups of variables, one group contains individual characteristics and the other group contains household characteristics. The first group of variables include age, square term of age, gender, past experience on labor market, party membership, education, training, and self-reported health status. The second group of variables consists of household size, share of kids aged under 16 in the household, share of labor[6] in the household, access to *dibao*, whether having incomes from private transfers or asset held.

Table 6 shows the regression results of the three equations. In the pooled regression, the dummy of FGRs is statistically significant, which confirms our previous conjecture that people living in FGRs are more likely to get a work keeping other things constant. In the separate regressions, we found that comparisons of some selected variables between two regions are pretty informative. Among the regressors, two variables are related to human capital. One is years of schooling and the other is training[7]. The results show that one

[5] The labor market participation rates are about 60 percent, so we may take advantage of linear probability model on interpretation of coefficients while avoiding its disadvantage of possible predicted value out of 1 or 0.
[6] Labor is defined as person whose age is 16 and above and not in school.
[7] In CULS2, each adult is asked a question "have you ever joined a training

additional year of schooling increases the probability of labor force participation by about 1.1 percent in FGRs while the probability is only 0.8 percent in other regions; If one ever involved in a training program, his/her probability of participating in the labor force increases by 16.5 percent in FGRs, while the incremental probability is only 9.8 percent in other regions.

Table 6 Liner probability of labor market participation

Participation =1, otherwise=0	Baseline	FGR	Other
Age	0.007	0.013	0.003
	(3.97)	(4.67)	(1.26)
Age square	-0.0002	-0.0003	-0.0002
	(13.10)	(10.45)	(8.27)
Sex (1=male)	0.164	0.168	0.161
	(16.90)	(11.13)	(12.65)
Past experience of employment shock	0.019	0.023	0.018
(1= yes)	(1.61)	(1.20)	(1.20)
Party member or not (1= yes)	0.009	0.026	0.005
	(0.69)	(1.04)	(0.29)
Years of schooling	**0.009**	**0.011**	**0.008**
	(5.46)	**(4.15)**	**(3.66)**
Self-reported health status	0.043	0.043	0.043
(1~9: the higher the healthier)	(10.22)	(5.94)	(8.19)
Household size	-0.011	-0.014	-0.009
	(2.26)	(1.82)	(1.41)
Ratio of kids to household size	0.056	-0.016	0.094
	(1.43)	(0.26)	(1.89)
Ratio of labor to household size	-0.070	-0.045	-0.085
	(3.18)	(1.28)	(3.01)
Access to dibao since 2002	0.012	-0.022	0.013
	(0.66)	(0.49)	(0.66)
Private income transfer or asset income	-0.001	-0.009	0.005
(1= yes)	-(0.15)	(0.62)	(0.37)
Trained or not (1 = yes)	**0.119**	**0.165**	**0.098**
	(4.83)	**(3.99)**	**(3.16)**
Fast growing region	**0.076**	-	
(1= yes)	**(7.47)**	-	
Cons	0.489	0.410	0.606
	(8.17)	(4.38)	(7.63)
Adj R-squared	0.43	0.42	0.44
Obs	6011	2409	3614

Source: calculated from CULS2.

In other studies, more active role of human capital on labor markets is

program which is more than one month?"

regarded as an evidence of labor market development in transitional China (Park, et al, 2005). With the same belief, we think that higher marginal effect of the two variables reflecting human capital endowment in FGRs is a proof that labor market in FGRs is better functioning than in other regions.

(1) Who Are Able to Find Jobs?

As we know, labor forces in/out of labor market consist of three types of status, working, unemployed, or out of labor market. Since we have already gone through the determination of labor force participation, our focus now should shift to working vs. non-working (unemployed and out of labor market). Because multinomial logit model requires a reference group and its coefficients are hard to explain, we still employ the linear probability model as follows.

The regression model is basically similar to the one estimated above, but two things distinguish them. One is the dependent variable now is changed as employment and the other is the breakdown of individuals by age group. We practice the breakdown, because our main purpose here is to find out who are more likely to be employed and what role age as an individual characteristic plays in determining the labor market status. Table 7 reports the regression outcomes.

Table 7 Liner probability of employment determination

Employment=1, otherwise=0	Baseline	FGRs	Other
Age group 20~39	0.095	0.030	0.129
	4.60	0.92	4.80
Age group 30~49	0.051	0.040	0.063
	2.66	1.42	2.46
Age group 40~59	-0.233	-0.234	-0.235
	12.26	8.53	8.97
Age group above 60	-0.595	-0.647	-0.564
	28.18	20.04	20.21
Sex (1=male)	0.154	0.168	0.146
	15.31	10.87	11.03
Past experience of employment shock	-0.129	-0.126	-0.133
(1= yes)	10.45	6.45	8.25
Party member or not (1= yes)	0.038	0.052	0.033
	2.71	2.39	1.80
Years of schooling	**0.012**	**0.016**	**0.010**
	7.27	**6.13**	**4.51**
Self-reported health status	0.044	0.043	0.044
(1~9: the higher the healthier)	10.19	5.93	8.28
Household size	-0.021	-0.016	-0.023
	4.14	1.91	3.56
Ratio of kids to household size	-0.107	-0.185	-0.065
	2.16	2.44	0.98
Ratio of labor to household size	-0.238	-0.189	-0.267
	5.59	3.05	4.57
Access to *dibao* since 2002	-0.089	-0.119	-0.089
	4.84	2.62	4.31
Private income transfer or asset income	-0.012	0.006	-0.021
(1= yes)	1.17	0.37	1.46
Trained or not (1 = yes)	0.110	0.138	0.093
	4.32	3.27	2.90
Fast growing region	0.076	-	-
(1= yes)	7.27	-	-
Cons	0.524	0.513	0.564
	8.63	5.48	7.04
Adj R-squared	0.41	0.42	0.40
Obs	6023	2409	3614

Source: calculated from CULS2.

As what we did before, in the pooled regression, the dummy of fast growing regions is a statistically significant determinant for employment. We break down the adults into five groups by age. Compared to those aged from 16 to 19, i.e. new entrants to labor market, those at their twenties or thirties have bigger possibility to

find a job in other regions, whereas the two variables are not statistically significant in FGRs. The other two older groups are less able to find jobs in both regions, which means that labor markets favor younger laborers. The role human capital variables play is proved to be similar to the regression in the case of labor force participation determination. One additional year of schooling increases probability to work by 1.6 percent in FGRs and increases probability to work by 1 percent in other regions. People who are ever trained have 16.8 percent bigger probability to work in FGRs and 9.3 percent bigger probability to work in other regions. Taking party membership partly as a human capital variable and partly as a social capital, we see its significant role positively impacting earnings in FGRs. These results are consistent with the conclusion revealed in previous regression that labor market in FGRs is better developed. Wherever a person lives, male is more likely to find a job. Health variable has positive effect on employment. Past experience of labor market shock affects one's employment status. We saw a positive sign of the variable in participation equation, but it is not significant. In this equation, the sign is negative for both regions and the magnitude is similar, which indicates that failure in labor market negatively for a person to find a job, though he/she is willing to.

In general, young male laborers with favorable human capital and good health tend to be in an advantageous position in finding a job. People ever experienced by employment shock and from a big family are more likely to be in a disadvantageous position in finding a job.

(2) Returns to Education

Return to education is one of the key indicators of labor market. Given that China is experiencing a transition from an administrative employment system, under which return to human capital was repressed, to a labor market that is supposed to provide incentives for individual and society to invest in human capital, we may expect to observe an increased return to education as labor market matures. To see the pattern, we regress the following model for both migrants and local residents by region.

$$\ln w_i = \alpha YOS_i + \beta_1 EXP_i + \beta_2 EXP_i^2 + \gamma_1 SEX_i + \gamma_2 PARTY_i + \gamma_3 HEALTH_i + \gamma_4 SEMP_i + \varepsilon_1$$

The left hand side variable is log hourly earnings. The advantage of using hourly earning is that it increases the comparability among people with different working intensity, such as migrants and local workers, wage employment and self-employment. The right hand side variables include typical variables in wage equation like years of schooling, experience and its square term. In addition, we

also include a set of control variables, such as gender, party membership, health status, and self-employment dummy.

In previous estimations, we did not intend to investigate the determination of migrants' labor market status, because rural-to-urban migration itself is a highly selective behavior now that seeking job is the most important motives migrants to migrate. However, it makes sense to include the migrants sample for this analysis if we assume the migrants and the local residents are on segmented labor markets. See Table 8 for regression results of four equations. Several findings are interesting here.

Table 8 Returns to Education

Log of hourly earnings	Local residents		R/U migrants	
	FGRs	Other	FGRs	Other
Years of schooling	**0.115**	**0.089**	**0.119**	**0.079**
	(16.04)	**(14.29)**	**(4.97)**	**(6.13)**
Experience on labor market	-0.001	0.000	0.067	0.036
	(0.25)	(0.04)	(3.22)	(3.18)
Experience square	0.000	0.000	-0.001	-0.001
	(0.52)	(0.07)	(3.34)	(3. 81)
Sex (1=male)	0.28	0.23	0.16	0.26
	(8.24)	(7.72)	(2.49)	(7.09)
Party member or not (1= yes)	-0.055	0.203	0.259	-0.096
	(1.19)	(4.87)	(1.12)	(0.60)
Self-reported health status (1~9: the higher the healthier)	0.086	0.066	-0.0002	0.007
	(4.65)	(4.44)	(1.35)	(2.16)
Self-employment (1= self-employment)	-0.266	-0.354	0.269	-0.068
	(4.77)	(8.17)	(4.36)	(1.78)
Cons	1.39	1.187	1. 51	15.41
	(8.20)	(8.46)	(4.26)	(2.40)
Adj R-squared	.25	.25	.038	.036
Obs	1473	1800	2517	3837

Source: calculated from CULS2.

First, for comparison between FGRs and other regions, each group of workers in FGRs has higher educational returns no matter they are migrants or local residents. Migrants who work in FGRs get 4 percent higher return to education than in other regions. As is expected by theory, that higher return to education in FGRs can be attributed to by better labor market functioning.

Second, migrant and local workers have almost the same level of in FGRs, whereas there is 1 percent difference in return rates to education between the two groups in other regions. Before concluding anything to suggest that migrants and local residents are better integrated into a labor market in FGRs, we need deeper

analysis that follows in next section.

Third, it is not surprising to see that party membership has no use for explaining migrants' earnings, because the variable used as proxy of social capital has lost its role while migrants went beyond their home villages. Nevertheless, for local residents, the role of political status is different between FGRs and other regions – no effect in the former but positive effect with rather big magnitude in the latter. This again proves that the labor market in FGRs is more competitive than in other regions.

(3) Recap

In the other report, we suggest that FGRs have strong labor demand. The analysis of firm level data shows that firms in FGRs have higher labor demand elasticities with respect to both output and wage. This means that, for given amount of output, FGRs create more job opportunities. In addition, firms in FGRs are more sensitive to price changes than those in other regions. The analysis here on individual level data supports the finding too.

On an average, people in FGRs have higher labor force participation rate and lower unemployment rate. This indicates that human resources are more effectively used in FGRs because those regions with fast economic growth create more job opportunities. Furthermore, labor markets in FGRs are more developed, which is proven by a more active role of human capital in determining labor force participation and employment, a higher return to education, and a more integration of migrants and local residents in labor market.

V. Are Enterprises in Fast-growing Regions More Job Creative?

So far, from both aggregated analysis and empirical works based on micro-level data, we have found that some identified regions with fast economic growth rates have provided most of opportunities for people who seek jobs in China. What mostly interests us is to understand how some regions create more jobs than others? To answer this question, we now move to use firm level data to estimate various labor demand functions so as to calculate labor demand elasticities based on the estimation.

1. Labor Demand Function

Obtaining estimates of the labor demand function is central for answering the

question of how jobs are created in firms and what difference there is in labor demand pattern between FGRs and other regions. What follows we will first describe our specifications of the labor demand function, discuss some econometric issues relating to the estimation, and then estimate labor demand function of firms conditional on output. As always, the whole sample is divided into FGRs and other regions for estimation, and a pooled estimation with whole sample is conducted as well.

Econometric Issues

Like other studies on estimation of labor demand functions, we are bound to concern about the endogeneity problem with output in the regression model when output-constrained labor demand functions is estimated. The basic model of our estimation is expressed as the following regression equation:

$$L_{i,t} = \beta X_{i,t} + \alpha w_{i,t} + \gamma Q_{i,t} + \varepsilon_{i,t}$$

$L_{i,t}$ is hired labor. In right hand side, $X_{i,t}$ is a set of control variables, $w_{i,t}$ is average wage per employee of firm *i* in year *t*, and $Q_{i,t}$ is the output of firm *i* in year *t*. Our objective here is to get α and γ, which are used for calculation of labor demand elasticity with respect to wage and output respectively.

The key econometric issue we concern about here is the correlation between output $Q_{i,t}$ and the error term $\varepsilon_{i,t}$, i.e., whether output is endogenous. If the answer to this question is no, OLS will show us desired statistical properties. Otherwise, we need an alternative estimation strategy to get desirable estimators. In this study, we have several reasons to worry about that output is endogenous.

First of all, some important variables that are correlated with output might be omitted from the labor demand function. In this case, OLS estimator of γ is biased although we are not sure about the direction of the bias. For a few variables, IC dataset provide retrospect data in the last few years. This makes it possible for us to use first difference or fixed effect model in order to eliminate the impacts of omitted variables that are fixed to firms. Secondly, firm managers usually make the employment and output decisions simultaneously. Finally, random measurement error in output will bias the estimator of γ toward zero. To correct for the last two problems, we may use instrument variables to get desirable estimators.

One drawback of IC data is that only a few variables are reported in 3 or 4 year time series. On the one hand, when fixed effect model or first difference model is applied, only a couple of variables are available to be instruments. On the other hand, when more instruments are chosen, they are not available for FV or FD.

So we will analyze 2002 data by 2SLS and FD and FE for some variables available for several years.

Estimation in 2002 Data: 2SLS

As is already discussed above, only a few variables are available for several years. Although we cannot remove the potential impacts of omitted variables in one-year data regression, we can mitigate the bias by adding more variables to it. In addition, more instruments are available if we only use the variables in 2002. The regression model we use is as follows.

$$\ln L_i = \beta_1 \ln lagL_i + \beta_2 PUB_i + \beta_3 RS_i + \beta_4 YOS_i + d_i^S + d_i^C + \alpha \ln lagW_i + \gamma \ln Q_i + \varepsilon_i$$

In the model, the dependent variable is total amount of labor firm hired in 2002 in logarithm term. Unfortunately, IC survey did not ask working hours of firms, so we cannot measure labor input by labor-hour. On the right hand side, we include two main explanatory variables, wage and sales revenue in logarithm form, plus a set of control variables including employment in last year, share of public ownership, share of redundant employees, average years of schooling of employees, dummies of sector, and city dummies.

$\ln lagW_i$, total labor compensation divided by total employment, is a major explanatory variable. We use its one-year lagged value to eliminate the possible simultaneity of labor use and wage change. Sales revenue in log form is the proxy for output. Since logarithm forms are taken in both sides of the equation, α and γ are labor demand elasticities with respect to wage and output, respectively.

We believe that current employment is confined to prior employment, because employment adjustment is difficult in short run. So we include last year employment, $\ln lagL_i$ into the regression. The coefficient of this variable can reflect labor market flexibility, to a certain extent. Our interest in this study indeed is to identify this effect and compare its difference labor markets in FGRs and other regions. Share of public ownership is incorporated into the regression to capture the effect of ownership on employment. Public ownership is the legacy of central planning system. As is well documented by scholars (for example, Giles et al., 2006; Meng, 2004; Lin, 2002), SOEs have been responsible for disobedient comparative advantage embodied in labor-intensive industries and for massive job loss during their restructuring. Therefore, the larger share of public ownership (PUB_i) is expected to lead to weak absorbability of employment while keeping other things constant. Share of redundant employees (RS_i) represents the efficiency of labor use within firms. It is evident that overstaffing in firms is the same thing as low efficiency of labor allocation. We include average years of

schooling (YOS_i) to control for the labor quality, which is a common variable widely used as a factor affecting employment. Apart from the variables we describe above, two sets of dummies, d_i^S and d_i^C, are employed to capture unobserved heterogeneity that might be correlated with the error term. One is 3-digit sector of firm. Since firms in different sector tend to use different technologies that significantly affect employment, the sector dummy may capture that effect. Obviously, city dummy is added to capture the heterogeneity related to city specific characteristics.

In this study, the following variables are selected. Capital stock in log form is one of direct determinants of output but not so for employment in short run. In the questionnaire, a question of "do you have an overdraft facility or line of credit?" is asked. We think it is a good variable proxy for capability for a firm to be operated. In short run, it is possible for firms to be operating below capacity if they are faced with financial constraints. However, if they have an overdraft facility or line of credit, they may make full use of their capacity. But no matter the firms capacity is fully used or not, firms are not easy to adjust their employment in the very short run. The other instrumental variables include ratio of total tax to sales revenue, share of export in total sales revenue, and dummy generated by the question "is the firm located in an industrial park, or science parks, or export processing zone?"

As long as instrument variables are applied, two fundamental conditions are required so as to select instruments.

(1) The instruments have to meet exogenous conditions, i.e, the orthogonality condition, which means E[Z'u]=0. To see if the instruments meet the first requirement, we apply over-identification tests to examine the exogeneity of instruments. Sagan test and Basman test are used in this study.

(2) Instruments relevance: we do not want that the instruments only have weak correlations with the endogenous variables, which means $E[Z'x] \neq 0$. According to Stock et al. (2002), various procedure are available for detecting weak instruments in linear IV model by looking at several statistics in the first-stage regression:

- The first-stage F-statistics must be greater than a threshold. As a rule of thumb F must be bigger than 10;
- The first-stage t-statistics as a rule of thumb must be greater than 3.5;
- The first stage R^2, greater than 30 percent.

The regression results and statistics for the test of orthogonality conditions and weak instruments are presented in Table 9. In this table, we report both 2SLS estimators and IV-GMM estimators. As is shown in the table, all the tests for

over-identification restrictions cannot reject null hypothesis, which means our instruments meet the orthogonality conditions. As for detection of weak variables, the two statistics in first-stage statistics also indicate a strong correlation between instruments and the instrumented variable.

Table 9 Labor Demand of Firms in 2002: 2SLS and IV-GMM

	2SLS			IV-GMM		
	FGRs	**Other**	**All**	**FGRs**	**Other**	**All**
Employment Equation: dependent variable=log of employment in 2002						
Log of sales income	**0.18**	**0.092**	**0.10**	**0.17**	**0.077**	**0.085**
	(3.28)	**(5.19)**	**(5.92)**	**(2.67)**	**(4.94)**	**(5.35)**
Log of employment in last year	0.78	0.87	0.87	0.80	0.89	0.89
	(11.84)	(43.61)	(44.36)	(11.06)	(47.62)	(46.65)
Log of wage in last year	**-0.090**	**-0.025**	**-0.032**	**-0.076**	**-0.017**	**-0.023**
	(2.59)	**(1.83)**	**(2.47)**	**(1.98)**	**(1.39)**	**(1.87)**
Fraction of public share	-0.053	-0.068	-.067	-0.063	-0.071	-0.067
	(1.07)	(3.84)	(4.11)	(1.38)	(5.08)	(4.90)
Share of redundant employees	0.003	0.001	0.0011	0.0024	0.00	0.001
	(2.17)	(1.71)	(2.28)	(2.26)	(0.60)	(1.05)
Average years of schooling	-0.0022	-0.0066	-.0055	-0.006	-0.006	-0.006
	(0.39)	(2.04)	(2.04)	(0.82)	(2.51)	(2.65)
Dummies of 3-digit sectors	Yes	Yes	Yes	No	No	No
Dummies of cities	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.96	0.97	0.97	-	-	-
No of Obs.	264	1539	1803	264	1539	1803
Tests for Over-identification Restrictions						
Sagan test	0.47	2.46	2.03	-	-	-
	[0.98]	[0.65]	[0.73]	-	-	-
Basman test	0.37	2.29	1.91	-	-	-
	[0.98]	[0.68]	[0.75]	-	-	-
Hansen J	-	-	-	2.61	2.61	1.70
	-	-	-	[0.63]	[0.63]	[0.79]
Statistics for Detecting Weak Instruments						
First-Stage F-Statistics	17.2	55.6	63.6	-	-	-
	[0.00]	[0.00]	[0.00]	-	-	-
First-Stage R^2	0.76	0.79	0.79	-	-	-
Instrument variables	Ratio of total tax to sales income in 2002; Share of export to sales income in 2002; Plants located in industrial park, or science parks, or export processing zone; overdraft facility or line of credit; log fixed capital					

Note: t value or z value in parenthesis, p value in brackets.

Source: calculated from IC survey data.

We first look at the effect of output on labor demand. It is obvious that FGRs have much higher labor demand elasticity with respect to output than other regions. FGRs almost double the elasticity of that of other regions. This result indicates that for a given amount of GDP at aggregated level, FGRs create more job opportunities, which is consistent with our previous observations based on provincial data. Labor demand elasticites with respect to labor compensation reflect that enterprises in FGRs are more sensitive to price changes. Although the magnitude of the coefficients for both regions are pretty low in short run, FGRs (-0.076~-0.09) have about two times more than that of other regions (-0.023~-0.025). Compared to FGRs, other regions are reluctant to adjust employment: the coefficient of lag employment is 0.87 for firms in other regions, while it is 0.78 for firms in FGRs. This implies that labor markets in FGRs are more flexible. It seems that public ownership is not good for employment, which is inferred by the negative sign of public share variable in 3 equations although the coefficient in FGRs is not statistically significant.

Fixed Effect and First Difference with IV

As stated above, a few variables in IC data are available in observing several previous years. However, it is fortunate that some key variables are included in the list of time series variables so that we may apply fixed effect model or first difference model to eliminate the influence of unobservable that might be correlated with error term. Furthermore, it makes possible for us to observe relatively longer period of labor market response to output and to price by using data from 1999 to 2002. So we may take the elasticities obtained from above regression as short-run elasticities, and regard the following elasticities obtained from FE and FD as long-run elasticities. Basic regression equation we used for FE or FD is as follows.

$$\ln L_{i,t} = \beta \ln lagL_{i,t} + \alpha \ln lagW_{i,t} + \gamma \ln Q_{i,t} + d_i^Y + \varepsilon_{i,t}$$

FD or FE estimators are helpful to get rid of the effect of time-invariant unobserved heterogeneity that correlates with error term, but we still want to remove the impacts of simultaneity of employment and output. So the instruments are still used in FE and FD model.

Table 10 presents fixed effect IV estimators by adding year dummies. We may find that in long run labor demand is more elastic. For pooled regression the value of γ increased from 0.1 in 2SLS up to 0.27 in FE and the absolute value of α increased from 0.03 in 2SLS up to 0.22 in FE, and both separate regressions for FGRs and for other regions witness these increases in values of γ and α .Still,

the labor demand in FGRs is more elastic than that in other regions, though the difference of magnitude of coefficients between two regions is smaller in the long run.

Table 10 Labor Demand from 2000 to 2002: Fixed Effect IV

	FGR	Other	All
Log of employment in last year	.183 (5.05)	.215 (10.96)	.206 (11.74)
Log of wage	**-0.239 (6.32)**	**-.205 (12.83)**	**-.215 (14.19)**
Log of sales income	**.456 (4.47)**	**.224 (5.83)**	**.271(7.21)**
Year dummies	Yes	Yes	Yes
Adj R-squared	0.76	0.86	0.84
No of Obs.	929	5048	5997
Instruments	Ratio of total tax to sales income; Log fixed capital		

* t value in parenthesis.

Source: calculated from IC survey data.

Table 11 shows estimators from first difference IV model. Compared to other studies, we get more consistent results of FD with FE. For pooled regression, we get very close value of α and slight difference of γ. The other two separate regressions show similar properties.

Table 11 Labor Demand from 2000 to 2002: First Difference IV

	FGRs	Other	All
Log of employment in last year	.070 (2.16)	.031 (1.70)	.037 (2.28)
Log of wage	**-.225 (6.49)**	**-.197 (13.00)**	**-.206 (14.06)**
Log of sales income	**.416 (4.60)**	**.191 (4.41)**	**.243 (5.78)**
Year dummies	Yes	Yes	Yes
Adj R-squared	0.71	0.72	0.70
No of Obs.	547	1599	2146
Instruments	Ratio of total tax to sales income; Log fixed capital		

* t value in parenthesis.

Source: calculated from IC survey data.

Ⅴ. Comparisons of Elasticity and Policy Implications

To sum up, based on the estimation of labor demand function above, we may conclude those elasticities in following table (Table 12). Labor demand elasticities with respect to output range from 0.09 to 0.18 in short run and from 0.19 to 0.45 in

long run. Labor demand elasticities with respect to wage range from -0.03 to -0.09 in short run and from -0.21 to -0.23 in long run. Results revealed by these comparisons and contrasts of the labor demand elasticities at several dimensions are policy implicative.

Table 12 Labor Demand Elasticities in Short and Long Run

	FGR	Other	All
Short run			
Labor demand elasticities w.r.t output	0.18	0.092	0.10
Labor demand elasticities w.r.t wage	-0.09	-0.025	-0.032
Long run			
Labor demand elasticities w.r.t output	0.42-0.45	0.19-0.22	0.24-0.27
Labor demand elasticities w.r.t wage	-0.23	-0.21	-0.21

Source: calculated from IC survey data.

Few studies put emphasis on labor demand elasticity with respect to output. The common way is to estimate an output-constrained function in order to control for output. We think the elasticity with respect to output is also policy implicative for transition China. China is currently at the stage with population dividend, which means that working age population takes ever-higher proportion of the total population (Cai and Wang, 2004). According to the census data in 2000, population between 16 and 64 account for 68 percent of total population. This ratio is going to be at its peak by around 2015. Considering the enormous size of the Chinese population and large share of working population, job creation should be taken as a long-term strategy for economic development so as to make good use of the abundant resource. From labor demand side, only if a given amount of GDP absorbs more labor force, as it has been already done in FGRs, can the comparative advantage embodied in labor abundance be translated to competitive advantage of the Chinese economy.

The other thing we are interested in is the elasticity comparison between FGRs and other regions. In long run and short run periods, with respect to either income or to price, labor demand elasticities in FGRs are bigger than that in other regions. This may suggest that the performance of FGRs is outstanding in choosing more labor-intensive technology and in taking advantage of labor market mechanism.

We also want to know if the values of elasticity we estimated are high or low

in a comparative perspective. According to an encyclopedic survey of the literature on labor demand elasticity by Hamermesh (1993), there is an enormously wide range of estimates on labor demand elasticity. However, an agreement can be reached by summing up the studies that the elasticities estimated lie between -0.4 and -0.5 in short run and long run and cluster around –1 (Borjas, 2005). Most of the existing studies, however, are empirically based on the experiences from developed countries, where labor markets are mature and thus firms are more sensitive to price change due to relatively perfect market information. Some recent studies focusing on the labor markets in developing economies provide more comparable results with our studies. By using establishment data, a series of literature suggest that labor demand elasticities range from -0.22 to -0.65 (Fajnzylber and Maloney, 2001). The variation depends on which groups are focused (i.e., skilled or unskilled, blue collar or white collar) and/or estimation strategy. Besides the specification of incorporating lag variables, wage in Fajnzylber and Maloney (2001) and employment in out study, will reduce the total elasticity because the lag term tends to enter with a positive sign. In another study, using Mexico firm data over period 1984-1990, Revenga (1997) finds that elasticity with respect to annual wage is about -0.19. Therefore, our estimates are quite close to those in the studies mentioned, that range from -0.19 to -0.35, on Colombia, Mexico, and Chile (Fajnzylber and Maloney, 2001; Revenga, 1997). Still, the short run elasticity in this study is very low, implying that in short run labor markets are still very rigid in contemporary China.

The last thing we want to mention here is the difference between long run and short run labor demands. It is a common sense that labor markets are more elastic with respect to relevant signals in long run, because it gives employers bigger possibility to make decision of reducing or expanding firm size by changing numbers of worker employed, while it is not an easy job in short run to adjust, because the adjustment of fixed capital that is accompanied by labor is difficult in short run. Even so, the short run elasticities estimated in this study are still too low. One other study (Cai, et al, 2005) found the evidence that labor market is rigid due to the institutional arrangements inherited from the planning system set barriers for the function of labor market, even in FGRs.

Ⅵ. Human Resource Practices of Employers

In this section, we are going to discuss the human resources practices of employers. As always, we want to keep eyes on the difference between FGRs and other regions so as to draw relevant policy implications. We will seek answers to

following two issues. First, is there any difference of training activities between labor markets in the two groups of regions? Secondly, are the disparities in firms' compensation practices exist between different labor markets?

1. Training Activities in Different Markets

As we have already showed in other part of this report, a large portion of enterprises provides trainings for their employees. According to IC data, 93 percent of the firms had the practice with only a small difference between FGRs and other regions – i.e., the former has 1.7 percent more training activities than the latter. But one drawback of IC data on training is that it only asks a question of "do you offer formal training to your employees", so we still do not have other information about the length, costs, and providers of the training. To fill up the information gap in IC data, we borrow some relevant information from CULS2 to understand the training activities at individual level. Table 13 presents the results calculated from individual data of CULS2.

Table 13 Training activities: observation from individual data

	FGRs	Other	All
Number of labor force (age 16 and above)	2660	3955	6615
% got training more than one month	3.05	3.94	3.58
The length of training (month)	2.68	2.20	2.37
Training fees paid by trainees (yuan)	364	230	279
Composition of training providers (%)			
Government	65.4	58.2	60.7
Employers	13.6	26.1	21.8
Commercial	9.9	6.5	7.7
other	11.1	9.2	10.0

Source: calculated from CULS2.

CULS2 asks several questions on training. At individual level, we found much lower proportion of labor obtaining training. Among the adult respondents, only 3.58 percent labor get more than one month training. It is a little bit surprising that respondents in other regions report higher proportion of getting training than in FGRs. But the training in FGRs is more intensive. The average length of training in FGRs is about 2.7 month, 21 percent longer than the length in other regions. Apart from the length, individuals in FGRs pay more for their training. Employees who get training in FGRs pay 364 yuan out of their own pockets, which is 58 percent more than in other regions.

As far as the providers of the training[8], it seems that government plays more active role in FGRs. Although among the possibilities of getting training, governments take a lead in both regions, they have larger share in FGRs. Fewer employers in FGRs provide training than in other regions. This result is not consistent with observations from IC data. But if commercial training is considered, which is not asked in IC data, we may expect that training activities in FGRs are more diversified and probably more market oriented.

2. Compensation Activities

By rule of thumb, if market forces play a role in enterprises' decision-making, firms should compensate their workers in accordance with their productivity. On the one hand, we may infer that firms under an environment of more developed labor market tend to pay their employees equivalence to their marginal contribution of labor to total output. On the other hand, some other factors beyond market force, particularly institutional ones may influence employers' payment decisions in contemporary China (Cai, et. al, 2005). In such a case, compensation activities are possible to stray away from the market determination. In other words, the average compensation of firms deviates from marginal productivity of labor.

To compare labor compensation activities in FGRs with other regions, we first estimate a two-input production function for both regions separately. Based on the estimators of production function, we calculate the marginal productivity of labor (hereafter denoted as $\hat{w}_i$) and take it as a comparable basis of firms' compensation. Then we compare the actual payment of the enterprise, w_i with the predicted one that we believe is equivalent to a market equilibrium level. For comparison, we simply regress the actual level of average labor compensation of firm on the predicted wage rate that is identical to marginal productivity of labor. Two parameters are concerned here for the comparison. First of all, we believe that the coefficient of $\hat{w}_i$ is closer to 1 if firms' compensation activities are more market determined. Second, in the regions where the decisions of compensation activities more rely on labor market, we may get more satisfied goodness to fit for the regression.

Table 14 shows the estimators of the production function and the simple regression of actual wage rate w_i on the predicted wage rate $\hat{w}_i$. For the estimation of production function, the factors inputs can explain more than 60

[8] IC data also asks the providers of training activities, but the inconsistency of internal logic check of the data indicates that the quality of training forms in IC data is questionable.

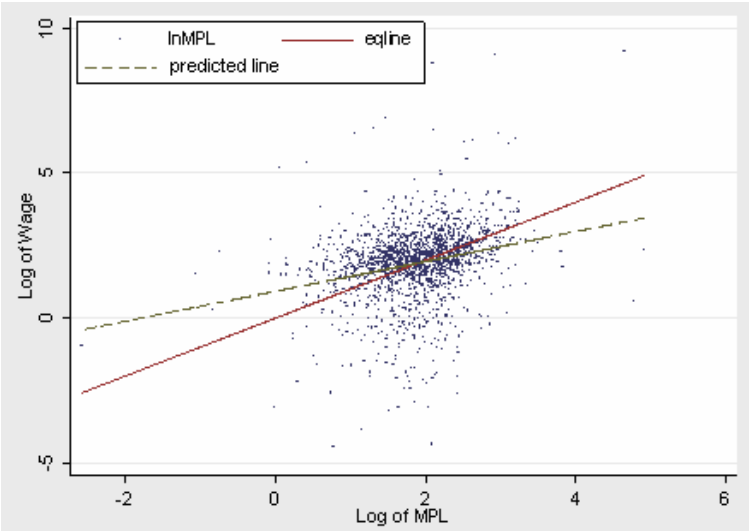
percent of output variation. Therefore the predicted value of wage rate $\hat{w}_i$ is reliable.

Table 14 Production Function and Comparisons of Compensation Activities

	FGRs		Others	
	Coeff	t value	Coeff	t value
Production Function (dependent variables: output in 2002)				
Log of Value of Fixed Asset in 2002	0.34	8.76	0.37	18.11
Log of Total Employment	0.73	11.46	0.61	17.55
Cons	3.22	11.86	2.79	23.81
Adj R-squared	0.65		0.61	
Regression of average labor compensation $\log w_i$ on marginal labor productivity $\log \hat{w}_i$				
Log of Marginal Labor Productivity	0.81	8.67	0.51	11.33
Cons	0.21	0.82	0.92	10.48
test: $\hat{w}_i = 1$				
F(1, n-2)	3.98		113.87	
Prob>F	0.05		.00	
Adj R-squared	0.16		0.06	
No. of Obs	394		1914	

Source: calculated from IC survey data.

It is obvious that firms in FGRs tend to compensate their employees by labor market rules. The predicted wage $\hat{w}_i$ explains 16 percent of variation of actual wage rate in FGRs, whereas only 6 percent of variation of actual wage rate can be explained by the predicted wage $\hat{w}_i$ in other regions. When the coefficient is concerned, firms in FGRs also present significant difference from those in other regions with the former being about 0.8 and the latter being around 0.5. To get a straightforward profile of difference between the two regions, we plot the scatter of log $\hat{w}_i$ and log w_i in Figure 3. The dash line is predicted wage based on actual wage. From the top panel of Figure 3, we may find that the predicted line is diversified from the solid line that represents the situation log w_i equals log $\hat{w}_i$, which means that labor compensation is fully determined by marginal productivity of labor. A significantly different pattern can be found in FGRs that fitted line and solid line are near to one another in most part of the scatters, implying a closer relationship between compensation and labor productivity.



Wages and Marginal Labor Productivity: Others

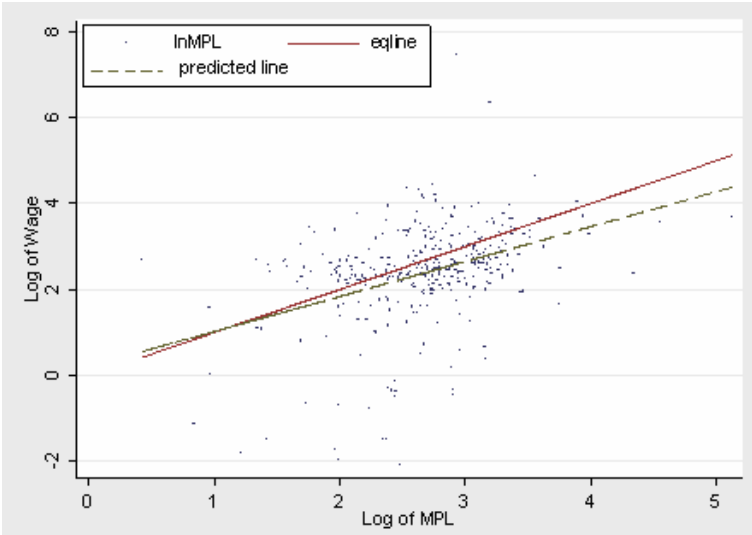


Figure 3 Relationships between Wages and Marginal Labor Productivity

Source: calculation from IC.

We also test if $\hat{w}_i$ equals 1 so as to confirm that the actual compensation behaviors are fully determined by the market if the null hypothesis is not rejected. The value of F test indicates that the null hypothesis is rejected at 5 percent level in FGRs and 1 percent level in other regions. These outcomes prove that labor compensation activities in China are still far away from market based behavior, even though enterprises in FGRs operate under a better-functioning labor market

environment than those in other regions.

Ⅶ. Policy Recommendations

From what we have done in analyzing the employment expansion in the fast-growing regions in a comparison with other regions in China, we can draw some policy implications on how regional economic growth and growth pattern help to increase employment, what makes the different patterns of job creation among regions, and what are the appropriate ways to promote employment expansion consistent with economic growth.

Abundant workforce supply and high savings rate have been working in spurring a fast economic growth in absence of significantly superior TFP performance and of noticeable differential between FGRs and other Chinese regions. Such a growth pattern has also generated a huge amount of employment opportunities. On the other hand, even in the fast-growing regions, economic growth, however, has not sufficiently taken advantage of its full potential in creating jobs, because labor market has not become decisive forces in allocating workforce. Furthermore, as the Chinese economy moves its new phase of development that requires new sources of growth with larger share of TFP contribution, the further employment expansion will become more and more replying on improvement of productivity.

Since the second half of 1990s, not only did TFP grow at a much lower rate than the early years of the reform, but also TFP contributes less to overall enhancement of labor productivity in the Chinese economy. For example, Zheng and Hu (2004) estimate a TFP growth rate of 4.63 percent annually in the Chinese economy during the period between 1979 and 1995, but a far lower level of 0.60 percent in the period of 1996 to 2001. Another study undertaken by World Bank staff (Kuiijs, 2005) sees the similar problem from different angle. In the period of 1978 to 1993, the labor productivity of the Chinese economy as a whole increased 7.0 percent per annum. The improvement of TFP contributed a little more than one half to this increase in labor productivity, while less than a half of contribution owes the enlargement of ratio of capital to labor. In the period between 1993 and 2004, annual growth rate of labor productivity was 7.8 percent, but only one third of this increase was attributed to by TFP improvement, while the remaining larger contribution came from the enlargement of ratio of capital to labor. This phenomenon can also be found in the survey we look into.

Figure 4 demonstrates the relationship between labor productivity and capital endowment per capita in enterprises of fast-growing regions and other regions.

One can obviously find the feature of the positive correlation between the two indicators – that is, the prevailing measures to enhance labor productivity are those to raise the ratio of capital to labor. In this regard, enterprises in the fast-growing regions have no significant difference from that in other regions.

Other regions FGRs

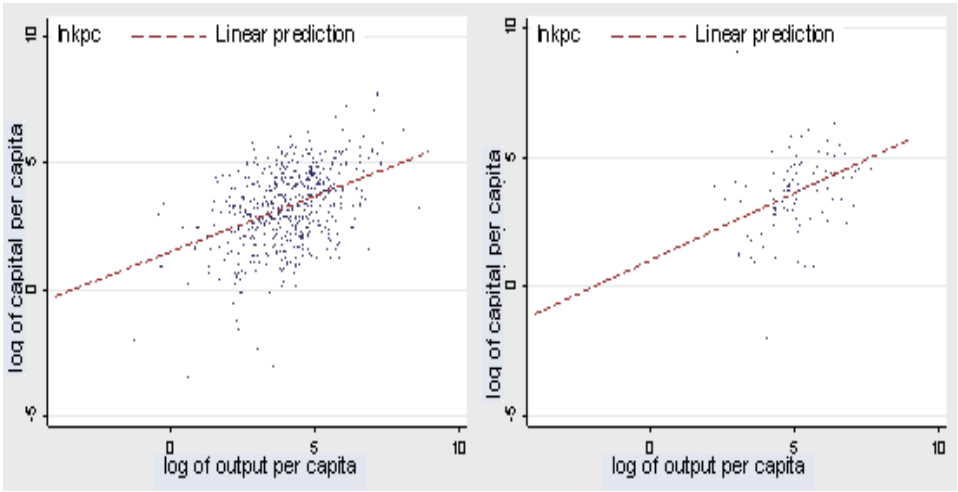


Figure 4 Capital Intensity Vs. Labor Productivity in FGRs and Other Regions

Since the mid of 1990s, China's industrial growth has witnessed a capital-intensive tendency in technological and industrial choices (Liu and Cai, 2004). One of the important outcomes that the reform generated in the early years of reform is the adjustment of distorted industrial structure characterized by heavy industry-oriented growth. In the period of 1978 to 1997, heavy industry and light industry grew in a relatively balanced way, the ratio of heavy industry growth rate to light industry growth rate was 0.89, comparing to 3.07 in the planning period. During the period between 1999 and 2003, the ratio increased again to 1.61, with some provinces in Eastern, Central and Western regions being as high as over 3.00, indicating a resurgence of heavy industry-oriented growth. While local governments' motives of pursuing GDP growth and of raising budgetary revenue by collecting taxes encourage the heavy industry-driven growth, a host of factors distorting relative prices of production factors intensify this tendency of growth.

A series of policies led to distortion of production factor price. For example, the relative price of capital and land was depressed and that of labor in some areas was raised artificially, and the investment intention in heavy industry has been

induced. Since 1998, both fiscal and monetary policies have been expansionary, which is characterized by reducing interest rate continuously to stimulate consumption and enterprises' investment. But the continuous decrease of interest rate does not imply that capital has become affluent in China. One research shows that, the marginal revenue of capital in rural non-agricultural sector has been much higher than that in urban industries and their gap has become larger and larger (World Bank, 2005). This indicates that capital is still scarce in China. The relative decrease of capital price caused by adjusting interest rate is just a cyclical phenomenon.

All those characteristics revealed above imply that the Chinese economy has not transformed its growth pattern from an input-based one to a productivity-based one. As the advantage in labor supply disappears, diminishing returns to capital will sooner or later occur if the sustainability of economic growth is not based on elevated productivity. Sustaining rapid economic growth requires a fundamental transformation of the growth pattern in China.

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