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## The Limited Job Prospects of Displaced Workers: Evidence from Two Cities in China

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## Abstract

The economic restructuring in China over the past decade has resulted in displacement of millions of workers who had been employed in the state sector. This has posed tremendous challenges economically, socially, politically, and culturally. For several years, Chinese policies attempted to cushion the shock by requiring state-owned enterprises to provide living allowances and reemployment services to workers that had been displaced. There have been relatively few empirical studies that have tracked the experiences of these displaced or *xiagang* workers. This study uses survey data from two large industrial cities to analyze the labor market situation of over 2,000 workers two years after they had been observed as displaced and unemployed. The findings point to the high rates of labor force withdrawal of *xiagang* workers and the relatively low proportion who find another wage job in the formal sector. It also documents the large number of workers who find work in the informal sector which seems to act as an important safety net. Not surprisingly, education is an important determinant of post-layoff labor market outcomes. Active labor market interventions do not seem to make a substantial difference although there is some evidence from the duration analyses that training does help workers find employment more quickly than they would have otherwise.

**JEL Classification:** J200, J210, J230, J240, J630, J640

**Keywords:** Displacements, determinants of activity and labor market status, formal employment and self-employment, unemployment duration, China.

# **The Limited Job Prospects of Displaced Workers: Evidence from Two Cities in China**

**Gordon Betcherman and Niels-Hugo Blunch<sup>†</sup>**

## **1. Introduction**

China's economic reform began in 1978 and during the next 15 years, state- and collectively-owned enterprises that had once been the bulwark of the economy became increasingly non-viable. By the mid-1990s, half of these enterprises were loss-making and China initiated a massive effort to restructure the state-owned sector. Between 1995 and 2001, the number of state-owned enterprises (SOEs) fell from 118,000 to less than 54,000 and more than 35 million state workers were laid off.

For many reasons, the labor adjustment that accompanied this restructuring represented a massive challenge. First, there was the sheer number of workers involved. Second, the prospect of job loss was a major cultural shock in a country where the "iron rice bowl" had traditionally provided workers and their families with cradle-to-grave security provided by the work unit. Although China had initiated state-sponsored social protection programs (pensions, health, unemployment benefits, etc.) as early as the mid-1980s, these were not well developed by the mid-to-late 1990s when the layoff numbers mounted. Third, although China's economic growth was generating large numbers of new jobs, the displaced workers from the state sector generally were not well suited to fill them. Most were relatively uneducated and few had the skills that the expanding private sector was seeking. Moreover, displaced workers tended to be in the northeast and central regions, far from the coastal area where the new economy was centered.

Concerned about these challenges, as well as potential social conflict, the Government in 1997 instituted a unique program to regulate the downsizing. All SOEs with surplus workers were to assume responsibility for their displaced (*xiagang*) workers for a period of up to three years to cushion the shock and to help the workers find

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reemployment. Enterprises were expected to set up Reemployment Service Centers that would provide *xiagang* workers with living allowances, retraining and other employment services, and make social security contributions on their behalf. Only after three years were workers who could not find new jobs (or not eligible for pensions) transferred to the unemployment insurance system and social assistance. Although this labor adjustment system based on enterprise responsibility undoubtedly provided some security (intangible as well as tangible) to the *xiagang* workers, many SOEs could not, or did not, fulfill their obligations because of their poor financial situation. In 2001, the Government started to phase out the Reemployment Service Centers and by 2003, this experiment was largely over.

There have been few empirical studies of the impact of this restructuring on the workers affected. Dong (2004) reviews the literature which, as she notes, has been based on data from large cities, with no evidence on the experience of workers laid off from SOEs in more remote communities.<sup>1</sup> The existing research finds that SOE restructuring has been associated with increases in urban poverty because large percentages of displaced workers have not found work again. Women, the poorly-educated, and workers with health problems had especially low reemployment rates. Exit rates from the labor force were very large. In all available studies, only a minority of *xiagang* workers reported being reemployed. The evidence is mixed in terms of whether workers who did find new employment gained or lost in terms of earnings. It is clear, however, that job loss reduced access to benefits such as health insurance. There is virtually no analysis of the impact of interventions on the reemployment of displaced workers. One exception is Bidani *et al.* (2004) which assesses the impact of retraining programs for *xiagang* workers in Wuhan and Shenyang. That study, which uses the same database used in this study, found that training improved reemployment probabilities in Wuhan but had no effect in Shenyang and had a modest impact on earnings in Shenyang but not in Wuhan.

This paper uses survey data from these two large industrial cities to analyze what happened to *xiagang* workers during the period when the Reemployment Program was in place. It tracks the situation of workers who were *xiagang* in 1998, observing their experiences over the next two years. The data allow us to describe the characteristics of

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<sup>1</sup> Studies included in Dong's review are Appleton *et al.* (2002); Cai (2002); Giles, Park, and Cai (2003); and a preliminary version of this study.

the displaced workers, their labor market experiences over the 1998-2000 period, the types of work that the reemployed found, and the impact of retraining and other programs provided by the Reemployment Service Centers and the municipal labor bureaus.

The remainder of the paper is structured as follows. The economic context in Shenyang and Wuhan is briefly summarized in section 2. The data and the study methodology are discussed in Section 3. In Section 4, we turn to the question of what happened to the displaced workers, describing their labor market situation two years after they were observed with *xiagang* status. This includes an analysis of the quality of work of those who had found new jobs by 2000, focusing in particular on the distinction between workers who were self-employed (in the informal sector) and those who had found formal wage employment. Section 5 presents multivariate analysis (both static and dynamic) of the determinants of labor market status, employment, self-employment, and unemployment duration. Finally, conclusions and policy implications are presented in Section 6.

## **2. Economic Background for Shenyang and Wuhan<sup>2</sup>**

The analysis in this paper covers two of China's largest cities, Shenyang and Wuhan. Shenyang, in Liaoning Province in the northeast, had a population of 6.9 million in 2000 while Wuhan, in central Anhui Province, had a population of 7.5 million. Both cities had been major centers of heavy industry in the first four decades of the planned economy and, as a result, both were heavily affected by the economic restructuring of the 1990s.

The economic and employment situation in Shenyang and Wuhan during the period covered in this study is summarized in Table 1. The two local economies were roughly comparable in terms of local GDP, although Wuhan's was somewhat more dynamic.<sup>3</sup> This reflects the fact that Wuhan enjoys better connections to the rest of China, with a more developed rail system, better communications, and more opportunity for developing trade and commerce. Both Shenyang and Wuhan had experienced annual GDP growth rates in excess of 10 percent over the period 1996-2000, but growth in

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<sup>2</sup> This section builds extensively on previous work that we have been involved in (Bidani *et al.*, 2004). More data on the economies of Shenyang and Wuhan are available in that study.

<sup>3</sup> The average annual disposal income of urban residents in 2000 in Wuhan was 6763 yuan, while it was only 5850 yuan in Shenyang. However, despite lower incomes, Shenyang residents saved more in the aggregate than Wuhan residents. The difference in the savings rate indicates either a scarcity of investment opportunities or reduced consumer confidence leading to lower spending.

Wuhan had been higher (5-6 percent higher in 1996-97 and 1-2 percent higher in 1998-2000).

Given the relatively strong high economic growth, labor market performance was not good in either city. However, the employment picture was clearly more favorable in Wuhan. Employment in Wuhan rose from 4.064 million in 1996 to 4.178 million in 2000, a gain of about 120,000 jobs. In Shenyang, employment actually declined by 55,000 over this period. In both cities, self-employment grew quickly – at 16.4 percent annually in Shenyang and 13.9 percent in Wuhan. Prior to restructuring, self-employment was fairly unusual in China. However, the absence of wage employment opportunities left self-employment – often in the informal sector – as the primary option for livelihood for large numbers of many displaced workers.

The employment structure across sectors was similar in both cities in 2000, with about 35 percent employed in the secondary industry and just over 40 percent in the tertiary sector, with the remainder in the primary sector. In both cities, job destruction was concentrated in secondary industries where SOE restructuring was concentrated. Employment losses in this sector were particularly large in Shenyang (almost 300,000 jobs between 1996 and 2000). In primary industries, employment remained stable in Wuhan while it grew (by 5.7 percent) in Shenyang. Employment grew in the tertiary sector in both cities, at around 3 percent annually in Wuhan and about 2 percent in Shenyang.

Overall, the data suggest that displaced workers in both cities faced difficult situations to find reemployment. Although the local economies were growing over the 1996-2000 period, this did not translate into substantial employment creation. Job losses in the secondary industries was very large because of SOE restructuring and job creation in the others sectors was not strong. Comparing the two cities, the situation was especially unfavorable in Shenyang. Growth was slower there than in Wuhan and job losses were greater.

**Table 1. Key Statistics for Shenyang, Wuhan and China**

	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	
<b>Total Population (10, 000 Persons)</b>						Average Growth Rate (%)
Shenyang	671	937.8	674.8	677	685.1	0.55
Wuhan	715.9	723.9	931.8	740.2	749.2	1.1
Whole Country	122389	123626	124810	125909	126583	0.9
<b>GDP (100 million Yuan)</b>						Average
Shenyang	764.4	851.1	938.8	1013.2	1119.1	1066.2
Wuhan	782.1	912.3	1001.9	1085.7	1206.8	1146.3
Whole Country	66850.5	73142.7	76967.2	80579.4	88189.6	84384.5
<b>GDP Growth Rate (%)</b>						
Shenyang	11.0	10.0	10.9	10.0	10.3	10.4
Wuhan	16.0	14.6	11.2	11.0	12.0	13.0
Whole Country	9.8	8.6	7.8	7.2	8.3	8.3
<b>Total Employment (10, 000 Persons)</b>						Average Growth Rate (%)
Shenyang	383.7	385.7	379.5	377.3	378.2	0.46
Wuhan	406.4	411.8	415.2	417.8	417.8	0.96
Whole Country	68850	69600	69957	70586	71150	0.94

**Table 1. Key Statistics for Shenyang, Wuhan and China (cont'd)**

	1996	1997	1998	1999	2000	
						Average Rate (%)
<b>Primary Industry Employment (10, 000 Persons)</b>						
Shenyang	74.2	78.2	82.7	87.7	88.7	5.71
Wuhan	91.4	93	92.8	92.9	91.4	-0.47
Whole Country	34769	34730	34838	35364	35575	0.06
						Average Growth Rate (%)
<b>Second Industry Employment (10, 000 Persons)</b>						
Shenyang	161.6	152.1	144.3	136.3	133.5	-4.11
Wuhan	154.6	154.2	152.3	151.9	148.9	-0.27
Whole Country	16180	16459	16440	16235	16009	0.49
						Average Growth Rate (%)
<b>Tertiary Industry Employment (10, 000 Persons)</b>						
Shenyang	148	155.6	152.6	154.6	156	2.07
Wuhan	160.4	164.6	170.1	172.9	177.4	3.03
Whole Country	17901	18375	18679	18987	19566	3.22
						Average Growth Rate (%)
<b>Self-employment (10, 000 Persons)</b>						
Shenyang	21	23	30.6	52.7	56.4	16.39
Wuhan	40.48	45.76	51.49	54.15	63.61	13.94
Whole Country	1709	1919	2259	2414	2136	7.38
						Average
<b>Employment Elasticity</b>						
Shenyang	0.125	0.052	-0.147	-0.058	0.023	-0.001
Wuhan	0.122	0.091	0.074	0.057	0	0.069
Whole Country	0.136	0.127	0.066	0.125	0.096	0.11

Source: China Statistical Yearbook (2001), Shenyang Statistical Yearbook (2001) and Wuhan Statistical Yearbook (2001).

### **3. Data and Sample Description**

This section describes the data and sample restrictions and provides a descriptive summary of the sample used for the analysis. The discussion of the dataset is relatively brief and more detail can be found in Bidani *et al.* (2004). The sample description covers both the characteristics of the displaced workers and information on pre-layoff employment.

#### **3.1 Data**

The data originates from a survey of displaced workers in Wuhan and Shenyang conducted by the Chinese Institute of Labor Studies from the end of May until the end of June 2000. The original purpose of the survey was to generate a database of displaced workers in order to assess the impacts of retraining programs on the reemployment of these workers. Accordingly, the 2000 survey sample was designed to generate “treatment” and “control” groups (i.e., based on whether workers received training or not) that could then be compared in a quasi-experimental impact evaluation. The results of the evaluation are reported in Bidani *et al.* (2004).

The methodology for the survey is also detailed in Bidani *et al.* (2004). The original sampling frame was based on administrative lists provided by municipal authorities in the two cities. The samples of displaced workers who had received training were selected from lists provided by either the training institutions (Shenyang) or the Labor Bureau (Wuhan). The samples of control groups (i.e., workers not receiving training) were based on lists of *xiagang* workers from a census of SOEs provided by the Shenyang and Wuhan Labor Bureaus. For the purposes of the present study, we merged the treatment and control group samples used for the training evaluation into a single sample of displaced workers.

The questionnaire was designed by the World Bank and subsequently revised and implemented by a team from the Chinese Institute of Labor Studies. Respondents were asked retrospectively about their labor market experiences both prior to and after being displaced. The survey collected information on current employment, work and job search history as well as demographic information, education and training information. Although the objective of the survey was to evaluate training impacts, the database includes the information needed to track the experiences of workers after being laid off.

Accordingly, we have selected a subset of the variables included in the full database to carry out the analysis reported in this paper.<sup>4</sup>

The basic method underlying our analysis is illustrated in Table 2. At some point (time  $t_{0-2}$ ), all workers in the sample were employed in a state- or collectively-owned enterprise. Some time later ( $t_{0-1}$ ), they were displaced. This layoff had to occur before July 1998, which is the baseline ( $t_0$ ). As we discuss below, we have restricted the sample in this analysis to workers who we are certain were displaced (*xiagang* status) and had not found reemployment at  $t_0$  (i.e., July 1998). We then observe those in the sample at the time of the survey ( $t_0 + 1$ ), which was carried out between the end of May and the end of June 2000, roughly two years after the baseline. The survey collected information from all respondents on their pre-layoff jobs, their *xiagang* period, and all labor market related information following lay off. In other words, the survey provides data for the period from  $t_{0-2}$ , through  $t_0$ , to  $t_{0+1}$ . Information on all but the last of these data points is provided retrospectively by the respondents.

**Table 2. Timeline for Survey**

$t_{0-2}$ :	$t_{0-1}$ :	$t_0$ :	$t_{0+1}$ :
SOE employed	→ Lay-off	→ Basline (July 1998)	→ Survey (end May-end June 2000)

### 3.2 Sample restrictions

As noted above, this analysis requires that the sample be restricted to workers who are displaced and have not found reemployment at  $t_0$ . In an earlier note, we had found that the complete sample assembled for the training evaluation had been contaminated by a substantial fraction of workers who actually were working in July 1998 (Betcherman, Dar and Blunch, 2002). The initial sample restriction we have imposed for this analysis, then, was to exclude all those who were employed in July 1998. That left a starting sample of 2029 observations. A second exclusion involves workers with missing observations on one or more explanatory variables. This numbered 83 cases, which caused the final estimation sample to be 1946 observations.

<sup>4</sup> The set of variables and their definitions that are used for the analyses in this paper are listed in Appendix A.

To check for non-random attrition issues, we tabulate means for key explanatory variables from the included and excluded observations along with the results from t-tests of difference in sample means. Restricting the estimation sample to those who had not found a job in July 1998 is essential for undertaking a time-bound analysis of the labor market experiences of unemployed workers. However, it should be recognized that, by excluding those workers who had been laid-off but had been successful in finding work before  $t_0$ , the estimation sample does not include a group of *xiagang* workers who apparently were more employable than the group of laid-off workers as a whole. As a result, the figures reported later in this paper underestimate the true reemployment probabilities of the population of laid-off workers in Shenyang and Wuhan over the period covered by the data. Table 3 presents the means for the key explanatory variables for the estimation sample and for the workers who were excluded either because they had been employed by July 1998, or because they had missing observations (the second exclusion identified above). Note that this excluded group is dominated by the first category (roughly 1,500 people). There are some differences in the two groups, but they are not too large either in substantive or statistical terms. The strongest difference relates to gender, where the final sample contains a larger proportion of females than those excluded (66% vs. 48%). There is also a difference in the share of workers receiving training, with a higher proportion in the estimation sample. Presumably, this reflects the fact that those finding jobs quickly (i.e., before July 1998) had less need to consider training. More modest differences are evident in terms of education and household characteristics. Finally, the estimation sample is equally divided between Shenyang and Wuhan, whereas those excluded were slightly more likely to be in Shenyang. Since the estimations carried out in this study are stratified by city and gender (where some of the largest differences were found), we conclude that serious problems of sample selection do not arise when moving from this expanded initial sample to the final estimation sample.

**Table 3. Descriptive Statistics and Homogeneity Test of Included Vs. Excluded Observations in Active/Non-Active Probit Regressions**

	<i>Estimation sample</i>			<i>Non-estimation sample</i>			<i>Diff. in means</i>
	# obs	Mean	Std Dev	# obs	Mean	Std Dev	
Female	1946	0.663	0.473	1570	0.480	0.500	0.183***
15-29 years old	1946	0.103	0.304	1596	0.091	0.287	0.012
30-34 years old	1946	0.187	0.390	1596	0.194	0.395	-0.007
35-39 years old	1946	0.282	0.450	1596	0.290	0.454	-0.008
40-44 years old	1946	0.244	0.430	1596	0.251	0.434	-0.007
45 and older	1946	0.184	0.388	1596	0.175	0.380	0.010
Married	1946	0.861	0.346	1596	0.865	0.342	-0.003
Female X married	1946	0.585	0.493	1570	0.420	0.494	0.165***
Primary/Jr Secondary	1946	0.473	0.499	1524	0.486	0.500	-0.013
Sr Secondary	1946	0.335	0.472	1524	0.295	0.456	0.040***
Tertiary	1946	0.082	0.275	1524	0.100	0.301	-0.018**
Vocational	1946	0.110	0.314	1524	0.117	0.321	-0.006
Other education	1946	0.000	0.000	1524	0.002	0.044	-0.002**
Household size	1946	3.268	0.917	1596	3.228	0.908	0.040*
Others employed in HH	1946	0.579	0.649	1596	0.549	0.652	0.030*
Children below age 6	1946	0.090	0.286	1596	0.075	0.266	0.015*
Children age 6 or older	1946	0.732	0.501	1596	0.770	0.506	-0.038**
Received training	1943	0.521	0.500	1593	0.432	0.495	0.089***
Shenyang	1946	0.509	0.500	1596	0.578	0.494	-0.070***

*Notes:* t-tests are one-sided and allow the error variance for treatment and control groups to differ, using the Satterthwaite (1946) correction.

\*: Statistically significant at 10 percent,

\*\* : Statistically significant at 5 percent,

\*\*\*: Statistically significant at 1 percent.

### ***3.3 Sample Description: Characteristics of Displaced Workers***

The key personal characteristics of displaced workers are presented separately for the full sample and by city and gender in Table 4. Two-thirds of the overall sample is female, with the share especially high in Shenyang (73.6 percent). As noted above, this high share reflects the exclusion of many *xiagang* men because they had found a job by July 1998. Nonetheless, even if this group were included, women would be in the majority; this is consistent with other research that has found that women were more likely than men to be laid off by downsizing SOEs. Most displaced workers are prime-age or older, with only about one in ten under the age of 30 (in 2000). This reflects the relatively old age composition of SOEs; most of these enterprises – especially those that had not been profitable – had not hired much for many years and, as a result, had aging workforces. Note, however, that the numbers in the 45-year and over category are

moderated because of early retirement ages in China.<sup>5</sup> The sample is characterized by relatively low levels of educational attainment. Almost one-half had only completed junior secondary or less. Less than 10 percent reported having completed tertiary education.

**Table 4. Worker Characteristics: Full Sample and By City and Gender (Percent).**

	<i>Full</i>	<i>Shenyang</i>	<i>Wuhan</i>	<i>Females</i>	<i>Males</i>
<i>Gender</i>					
Male	33.7	26.4	41.3	0.0	100.0
Female	66.3	73.6	58.7	100.0	0.0
Total	100.0	100.0	100.0	100.0	100.0
<i>Age</i>					
15-29	10.3	12.3	8.2	10.0	10.8
30-34	18.7	17.6	19.9	19.3	17.5
35-39	28.2	26.4	30.0	30.8	23.0
40-44	24.4	22.6	26.3	24.6	24.1
45 or older	18.4	21.1	15.7	15.3	24.5
Total	100.0	100.0	100.0	100.0	100.0
<i>Education</i>					
Primary/junior secondary	47.3	54.1	40.2	46.7	48.5
Senior secondary	33.5	24.0	43.2	35.6	29.3
Tertiary	8.2	10.2	6.2	7.0	10.7
Vocational	11.0	11.6	10.5	10.8	11.6
Total	100.0	100.0	100.0	100.0	100.0
<i>Marital/disability status</i>					
Married	86.1	84.6	87.7	88.2	82.0
Disabled	5.2	5.9	4.6	5.0	5.6
<i>Children below age 6</i>					
None	91.0	91.5	90.5	91.5	90.1
One	9.0	8.5	9.5	8.5	9.9
Total	100.0	100.0	100.0	100.0	100.0
<i>Children age 6 and above</i>					
None	29.6	31.2	27.8	26.4	35.7
One	67.7	66.2	69.4	71.6	60.2
Two or more	2.7	2.6	2.8	2.0	4.1
Total	100.0	100.0	100.0	100.0	100.0

<sup>5</sup> Retirement ages are 55 for males and 50 for females. At this age, *xiagang* workers move from the SOE to the formal pension system. Thus, in principle, they would not be included in the original sample frames. It should be noted that early retirement was part of the retrenchment strategy of SOEs.

**Table 4. Worker Characteristics: Full Sample and By City and Gender (Percent).(cont'd)**

	<i>Full</i>	<i>Shenyang</i>	<i>Wuhan</i>	<i>Females</i>	<i>Males</i>
<i>Others employed in household</i>					
None	49.6	44.7	54.8	45.0	58.7
One	44.0	47.6	40.4	48.7	34.9
Two or more	6.3	7.8	4.8	6.3	6.4
Total	100.0	100.0	100.0	100.0	100.0
N	1946	990	956	1290	656

The majority of workers in the sample are married (86 percent). Presence of children in the household reflects the older age composition of the sample – over 90 percent do not have children below 6 years of age, while about two-thirds have a child age 6 or older. About half of the displaced workers in the full sample have at least one other employed person in the household.

Table 5 summarizes information on the characteristics of the jobs held by respondents prior to lay-off, again for the full sample and across cities and gender. About one-quarter of the full sample had been laid off for less than a year (as of July 1998). Note that about almost half (55 percent in Wuhan) had been displaced for more than two years, which suggests that they had maintained their connection to their SOE longer than the legal maximum of three years. This is consistent with the general perception that some SOEs do not sever their relationship with *xiagang* workers even after they no longer have legal obligations; on the worker side, many who cannot find work prefer to remain with their SOE either because they are still receiving some benefits or in the hope or expectation that they will receive benefits in the future or even be called back to work. Overall, the results on time since lay-off underline the fact that many of the workers at  $t_0$  had been without employment for a considerable period of time.<sup>6</sup>

The results on tenure show that most *xiagang* workers are long-service workers; only 13 percent had been with their enterprises for less than five years. Almost two-thirds had tenures of 10 years or more. Table 5 shows that about one-half of the *xiagang* workers were receiving medical coverage and a similar proportion was having pension contributions made on their behalf; less than a quarter were having unemployment

<sup>6</sup> While we know that all of these workers were not employed in July 1998, it is possible that some of the sample may have worked at some time since they were laid off.

premiums paid. The only partial receipt of benefits by these *xiagang* workers likely reflects two factors – some had exhausted their three-year eligibility period and some others were presumably not getting benefits for which they were eligible. As we noted earlier in this paper, non-payment was not uncommon among SOEs. As the table indicates, Shenyang workers were less likely to get all of these benefits, perhaps because enterprises in that city may have been financially worse off than their counterparts in Wuhan.

#### 4. What Happened to the Displaced Workers?

In this section, we present a descriptive picture of the labor market situation of the *xiagang* workers in May-June 2000 (i.e.,  $t_{0+1}$  in Table 2), just less than two years after they had been observed as displaced and without work (i.e.,  $t_0$ ). In the first part of the section, the focus is on the labor market status of the workers in 2000 while in the second part, we turn to the characteristics of jobs held by the workers who were employed.

**Table 5. Job Characteristics (Prior to Layoff): Full Sample and By City and Gender (Percent).**

	<i>Full sample</i>	<i>Shenyang</i>	<i>Wuhan</i>	<i>Females</i>	<i>Males</i>
<i>Time since lay-off (years)</i>					
Less than one	24.3	29.4	18.9	23.3	26.2
More than one but less than two	28.0	30.6	25.2	26.8	30.2
More than two but less than five	23.2	22.8	23.6	24.0	21.7
Five or more	24.6	17.2	32.2	25.9	22.0
Total	100.0	100.0	100.0	100.0	100.0
<i>Tenure (years)</i>					
Less than 5	13.0	15.1	10.8	13.8	11.5
More than 5 but less than 10	23.1	22.7	23.5	24.0	21.2
More than 10 but less than 15	29.0	25.5	32.5	29.0	28.9
More than 15 but less than 20	23.0	23.4	22.6	23.2	22.6
20 or more	12.0	13.3	10.6	10.0	15.9
Total	100.0	100.0	100.0	100.0	100.0
<i>Benefits</i>					
Reimbursement of medical expenditures	51.1	38.8	63.8	49.0	55.2
Unemployment contribution paid by enterprise	23.9	16.7	31.4	21.2	29.3
Pension insurance contribution	50.8	42.5	59.3	48.9	54.4
N	1946	990	956	1290	656

#### **4.1 Labor Market Status in mid-2000**

The labor market status of respondents in May-June 2000 is classified according to six mutually exclusive labor market status categories – employee, self-employed, employer, retired, out of the labor force *and* of working age, and unemployed *and* searching.<sup>7</sup> (See Appendix A for the definitions of these categories).

Table 6 summarizes the labor market status according to these categories for the full sample and for key subsamples defined by city, gender, age, and education. The overall picture depicted by this table is that relatively small numbers of workers were employed – especially in wage employment – nearly two years after they had been observed as laid off. Looking first at the full sample, just over one-half (52 percent) reported they had left the labor market. Most of these (44 percent) were still of working age but were no longer active; a much smaller share (8 percent) defined themselves as retired. Among those in the labor force, the unemployed, i.e., those without work but searching, represented by far the predominant category – 24.4 percent of the total sample, compared to a combined 23.7 percent for those employed (as wage employees, self-employed, or employer). In fact, the unemployment rate among those who were active was 50.7 per cent. Among those who had work, note that almost as many were self-employed as were in wage employment.<sup>8</sup>

This overall picture more or less applies to both Shenyang and Wuhan. In both cities, just over one-half of the samples were out of the labor force. The only major difference is that a greater share of the non-actives in Wuhan was retired (12.5 percent of sample vs. 3.8 percent in Shenyang), while in Shenyang, non-participants were more likely to be of working age (47.1 percent of sample vs. 40.6 percent in Wuhan). The unemployment rate was somewhat higher in Shenyang (54 percent vs. 47.4 percent). In both cities, self-employment represented an important share of total employment.

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<sup>7</sup> These classifications differ somewhat from standard ILO definitions; this is due to the questionnaire design, which enables us to distinguish between more refined measures of labor market status than merely employed, unemployed, and out of the labor force. We also feel that this more refined measure of employment status is useful for the present analysis. The group “out of the labor force and of working age”, for example, is found by using the standard ILO definition of out of the labor force and combining it with information on the reason given why the worker in question is not searching – specifically, conditioning on the reason given *not* being “feeling old/retired.” By using these definitions, we also wanted to stress the fact that the unemployed (the last category) are active – a more standard terminology here might be “not working and active”, since being active typically is implicit in the term “unemployed” but we think “unemployed and searching” is more descriptive.

<sup>8</sup> Only 0.3 percent reported they were employers. Since such a small fraction would lead to very imprecise estimates, we will disregard this group in our econometric analysis.

The overall labor force situation was worse for women than it was for men, even though it was certainly not good for men. Women were less likely to be employed – 20.2 percent of sample vs 30.3 percent for men. They had a much higher probability of being out of the labor force despite being of working age (47.3 percent vs. 37.2 percent for men). Moreover, for those still in the labor force, their unemployment rate was considerably higher than the male rate (55.0 percent vs. 44.1 percent).

The age and education distributions of the sample in each of the labor market statuses are also included in Table 6. In terms of age, employees and the self-employed are somewhat more likely to be under 35 years than the sample as a whole. The sub-samples reporting they were out of the labor force or unemployed are distributed similarly to the overall sample with one exception although individuals between 35-39 years were overrepresented among the unemployed. The group of retired workers, of course, is heavily weighted towards the older-age categories; however, it should be noted that almost one-half were below 45 years of age. Turning to educational attainment, wage employees were the best-educated of the six labor market statuses – 63 percent had gone beyond primary/junior secondary compared to 53 percent for the full sample. Both the retired and the out of the labor force groups were less educated than the full sample. On the other hand, the educational distribution of the unemployed was similar to the overall sample.

**Table 6. Labor Market Status in May-June 2000 by Worker Characteristics (Percent).**

	<i>Full sample</i>	<i>Employee</i>	<i>Self-employed</i>	<i>Employer</i>	<i>Retired</i>	<i>Out of LF, of working age</i>	<i>Unemployed (searching)</i>
<i>Share of group in sample</i>							
<b>Full sample</b>		<b>12.7</b>	<b>10.7</b>	<b>0.3</b>	<b>8.1</b>	<b>43.9</b>	<b>24.4</b>
Shenyang		12.6	9.7	0.3	3.8	47.1	26.5
Wuhan		12.8	11.7	0.2	12.5	40.6	22.3
Females		11.3	8.8	0.1	7.8	47.3	24.7
Males		15.4	14.3	0.6	8.5	37.2	23.9
<i>Age</i>							
15-29	10.3	14.6	13.9	0.0	0.0	10.2	10.1
30-34	18.7	24.3	19.7	0.0	5.1	19.0	19.6
35-39	28.2	25.1	25.0	20.0	15.9	28.1	35.4
40-44	24.4	21.5	26.0	20.0	31.2	26.1	20.0
45 or older	18.5	14.6	15.4	60.0	47.8	16.6	15.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<i>Education</i>							
Primary/junior secondary	47.3	37.3	48.1	60.0	52.9	50.2	44.8
Senior secondary	33.5	34.4	29.8	40.0	35.0	33.1	34.5
Tertiary	8.2	14.6	10.1	0.0	5.7	6.1	8.8
Vocational	11.1	13.8	12.0	0.0	6.4	10.5	11.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	1946	247	208	5	157	854	475

Table 7 summarizes the labor market situation of the sample in mid-2000 according to job characteristics prior to lay-off. Looking first at time since layoff (as measured in July 1998), workers who had found wage employment by mid-2000 did have somewhat shorter periods in *xiagang* status (2.8 years vs. sample mean of 3.2 years). On the other hand, those who had retired reported longer periods since layoff. This group also had had longer average tenures at the job they had had prior to layoff (which is consistent with the fact that they were older).

Access to benefits through the prior job was fairly evenly distributed across the six labor market groups. Perhaps surprisingly, there are not as large differences in the prior occupation among the six groups as one might expect. To some degree, white-collar workers – managers, professionals, technicians, and clerks – were more successful in finding wage employment. These occupations accounted for 40.2 percent of the wage employees in 2002 although they only represented 31.3 percent of the overall sample. Retirees were overrepresented in blue-collar occupations, especially among machine operators.

**Table 7. Labor Market Status in May-June 2000 by Job (Prior to Layoff) Characteristics (Percent, except where noted).**

	<i>Full sample</i>	<i>Employee</i>	<i>Self-employed</i>	<i>Employer</i>	<i>Retired</i>	<i>Out of LF, of working age</i>	<i>Unemployed (searching)</i>
Time since lay-off (mean, years):	3.2	2.8	3.1	2.9	3.7	3.3	3.1
Tenure in enterprise (mean, years)	12.5	11.7	13.1	16.2	16.3	12.5	11.9
<i>Benefits</i>							
Reimbursement of medical exp.	51.1	56.4	51.0	80.0	65.0	49.4	45.3
Unemployment contribution paid by enterprise	23.9	26.1	27.5	20.0	26.1	22.2	23.8
Pension insurance contribution	50.8	56.9	54.9	60.0	54.8	49.3	46.5
<i>Occupation</i>							
Manager	4.3	8.5	4.3	20.0	5.1	2.4	5.1
Professional	4.2	5.7	2.4	0.0	4.5	3.3	5.9
Technician	11.2	13.0	10.6	0.0	10.8	12.0	9.5
Clerk	11.6	13.0	11.5	20.0	8.3	11.4	12.4
Service worker	6.8	6.5	7.7	0.0	3.8	6.2	8.4
Agriculture/fishing	0.3	0.0	0.5	0.0	1.3	0.4	0.0
Crafts	20.0	18.7	22.1	20.0	10.8	21.2	20.8
Machine operator	33.6	29.7	34.6	20.0	45.9	34.7	29.5
Unskilled labor	7.9	4.9	6.3	20.0	9.6	8.5	8.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	1946	247	208	5	157	854	475

Another potentially important factor when trying to understand the experiences of displaced workers is the issue of lay-off stipend receipt. This refers to the living allowances that SOEs were expected to pay workers while they were in *xiagang* status. However, it was not unusual for these payments not to be paid because enterprises either did not have the finances or did not want to spend them for this purpose. As Table 8 indicates, almost 56 percent of the sample reported that they had received these stipends. Note the huge difference between the two cities – only about one-quarter of *xiagang* workers in Shenyang received the allowances while almost 90 percent did in Wuhan. This likely reflects the better financial shape of SOEs in Wuhan. Men were also somewhat more likely to receive the allowances than women.

**Table 8. Labor Market Status in May-June 2000 by Lay-off Stipend Receipt Incidence (Percent)**

	<i>Full Sample</i>	<i>Employee</i>	<i>Self-employed</i>	<i>Employer</i>	<i>Retired</i>	<i>Out of LF, of working age</i>	<i>Unemployed, Searching</i>
Full sample	55.8	54.7	53.9	60.0	79.0	56.3	48.4
Shenyang	24.7	23.2	19.8	33.3	34.2	27.7	20.2
Wuhan	88.0	86.9	83.0	100.0	93.3	90.7	83.1
Females	52.8	47.3	51.8	0.0	79.2	55.3	42.8
Males	61.6	65.4	56.4	75.0	78.6	59.0	59.9
N	1946	247	208	5	157	854	475

In the full sample and in all of the sub-samples included in Table 8, *xiagang* workers who had chosen to retire were much more likely to have received the stipend than workers who were in other labor market statuses in mid-2000. This could reflect the fact these workers could afford to retire because they had been benefiting from the stipend; alternative, it may be due to a tendency on the part of enterprises to ensure that their older *xiagang* workers got the benefit even if other workers did not. This would be consistent with the view that SOEs felt the greatest responsibility for older, long-tenure workers. Workers who were unemployed in mid-2000 were most likely to report they had not received the stipend. This could possibly explain why they chose – or could not afford not to—continue searching for a job.

#### ***4.2 Characteristics of Employment for Those Finding Work***

As we saw in Table 6, the relative small proportion of *xiagang* workers who had found work by mid-2000 was fairly evenly split between wage employment and self-employment (12.7 percent and 10.7 percent of full sample, respectively). In this sub-section, we look at various indicators in order to assess and compare the quality of work in these two categories of employment. In general, we can associate wage employment with jobs in the formal sector while self-employment would be predominantly in the informal sector. This is of particular interest in the Chinese context because there has been very little empirical analysis of the informal sector which is a relatively new phenomenon that has expanded as the state-owned economy has declined.

Table 9 presents several indicators of employment in these two categories.<sup>9</sup> Looking first at earnings, self-employed workers report higher mean monthly earnings than wage employees – the differential is 7.5 percent. This is somewhat unexpected since the general perception is that formal-sector wage employment consists of “better” jobs than self-employment, primarily located in the informal sector. Moreover, as we have seen, wage employees are better educated, on average, than the self-employed. However, additional information included in the table shows that the wage premium is actually in favor of the formal wage employees, as would be anticipated.

First, the mean earnings results reflect the fact that the mean for the self-employed is influenced by some very high observations; note the much larger standard deviation compared to wage employees. When we consider median monthly earnings, wage employees have a 12.5 percent premium. Moreover, once hours are included, their earnings premium becomes even stronger. The self-employed report much longer working time than wage employees (16 percent on average). When we calculate hourly earnings, the compensation premium for wage employees is about 7 percent on the basis of means and 16 percent for median earnings. These results are supported by the kernel plots of monthly earnings, monthly hours, and hourly earnings depicted in Figures C1-C3, Appendix B. The distribution of earnings for the self-employed is more weighted towards the tails than is the case for wage employees (Figure B1). The longer hours worked by the self-employed are shown in Figure B2. In terms of hourly earnings, Figure

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<sup>9</sup> Since in this sub-section we are concerned with the overall quality of work between these two sectors, we use the full sample for this part of the analysis, i.e. disregard the issue of whether workers were really displaced in July 1998.

B3 shows the distribution for wage employees to the right of the distribution for the self-employed.

The bottom half of Table 9 presents some information on the characteristics of wage employment. What stands out is that wage employment found by *xiagang* workers is largely in the private sector and, in the large majority of cases, is precarious employment in the sense that most workers do not have the protection of a labor contract nor access to benefits. About two-thirds of the wage employees report that they are working in the private sector, a joint venture, or some other ownership form. The rest remained in the state sector, either in an SOE or in government. About 70 percent of all wage employees have no labor contract. Finally, only about one in ten reports they have access to medical benefits or are covered by unemployment insurance; the coverage for pensions is a bit higher but is still only 14.1 percent. These benefit incidences are far below what workers had before they were laid off (recall Table 5).

To summarize, workers who found wage employment were better off in terms of earnings than their counterparts who became self-employed. Once the long hours are considered, the returns for the bulk of the self-employed were clearly inferior. Moreover, since self-employment can be presumed to be in the informal sector, wage employees would be expected to have better access to protections typically offered in formal sector situations. These advantages associated with wage employment are not surprising since the better-educated *xiagang* workers were most likely to wind up in the formal wage sector. However, evidence on the prevalence of contracts and the incidence of benefits suggests that, even for those who did find work in wage employment, their jobs were most often precarious and without benefits.

**Table 9. Job Characteristics (Current), Wage Employees and Self-Employed (Percent).**

	<i>Employee</i>	<i>Self-employed</i>
<i>Current monthly earnings (Yuan):</i>		
Mean	523.4	562.8
Standard deviation	469.2	692.4
Median	450.0	400.0
<i>Current monthly hours:</i>		
Mean	216.7	251.7
Standard deviation	71.9	90.7
Median	208.6	243.3
<i>Current hourly earnings (Yuan):</i>		
Mean	2.96	2.77
Standard deviation	6.78	5.83
Median	2.19	1.88
<i>Type of employer:</i>		
State enterprise	28.2	NA
Government	6.2	NA
Private company	47.8	NA
Joint venture	9.2	NA
Other	8.6	NA
	100.0	
<i>Labor contract type:</i>		
No labor contract	70.5	NA
Short-term (less than six months)	3.7	NA
Long-term (greater than six months)	25.8	NA
	100.0	
<i>Benefits:</i>		
Reimbursement of medical exp.	11.1	NA
Unemployment contribution paid by enterprise	9.4	NA
Pension insurance contribution	14.1	NA
N <sup>1</sup>	759	857

1. This is the maximum number of observations: for some of the measures, there are slightly fewer observations (but never more than 10 observations less than this). The differences in the number of observations for the different variables is also the reason why mean average earnings are not equal to mean monthly earnings divided by mean monthly hours.

## 5. Multivariate Analysis

This section presents the multivariate analysis. The first part reports the results of our static analysis of the situation of the xiagang workers in mid-2000 ( $t_0+1$ ). In particular, we look at the determinants of labor force activity status, employment (conditional on being active), and self-employment (conditional on being employed). This is followed by a duration analysis which examines the determinants of the length of time (from  $t_0$ ) until the first job.

### 5.1 Static analysis: Determinants of labor market situation in mid-2000

*Labor force activity.* As we saw in the preceding section, the sample of *xiagang* workers was roughly evenly split in terms of whether they were in the labor force (either employed or searching for work) in mid-2000 (recall Table 6). To understand the determinants of participation, we ran probits of whether workers were active, using various individual characteristics as regressors. The results – in terms of marginal effects – for the full sample and separately by city and gender as well as tests for sample split (i.e., whether separate model structures exist) along these two dimensions are presented in Table 10. The table indicates that there are differences across cities and gender, as supported by the statistically significant test statistic for sample split by gender and the nearly statistically significant test statistic for sample split by city.<sup>10</sup>

The results show that many individual characteristics are statistically significant determinants of labor force participation. Not surprisingly, there is a strong gender difference in activity status; in the full sample, females are less likely to be in labor force by about 15 percentage-points. This result is driven by Wuhan, where the probability of female participation is about 29 percentage-points less than for males, while there is no significant difference in Shenyang. Age also matters, with younger workers significantly more likely to be active than older workers. Workers under the age of 40 are almost 15 percentage-points more likely to be in the labor force than the reference group of people 45 and older. The results on age apply across cities and genders. In general, the probability of participating is positively related to education and is especially strong for

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<sup>10</sup> The null hypothesis is that there are no structural differences across gender (cities), while the alternative hypothesis is that there are. Rejection of the null hypothesis therefore leads to the conclusion that there are structural differences in activity determinants across gender (cities).

**Table 10. Marginal Effects from Active vs. Non-Active Probit Regressions, Pooled and Across Cities and Gender**

	<i>Full</i>	<i>Shenyang</i>	<i>Wuhan</i>	<i>Females</i>	<i>Males</i>
Female	-0.151** [0.063]	-0.002 [0.088]	-0.289*** [0.094]		
15-29 years old	0.143*** [0.054]	0.130* [0.072]	0.168** [0.083]	0.080 [0.070]	0.259*** [0.075]
30-34 years old	0.142*** [0.041]	0.163*** [0.057]	0.134** [0.061]	0.155*** [0.052]	0.138** [0.068]
35-39 years old	0.133*** [0.035]	0.150*** [0.048]	0.124** [0.054]	0.141*** [0.046]	0.143** [0.057]
40-44 years old	0.043 [0.036]	0.051 [0.049]	0.044 [0.055]	0.055 [0.047]	0.019 [0.058]
Sr Secondary	0.040 [0.027]	0.070* [0.041]	0.030 [0.038]	0.042 [0.033]	0.050 [0.047]
Tertiary	0.135*** [0.043]	0.113** [0.056]	0.191*** [0.070]	0.075 [0.059]	0.214*** [0.061]
Vocational	0.059 [0.040]	0.095* [0.055]	0.021 [0.059]	0.054 [0.050]	0.081 [0.067]
Disabled	-0.152*** [0.049]	-0.200*** [0.062]	-0.093 [0.080]	-0.075 [0.062]	-0.280*** [0.081]
Lay-off Stipend	-0.108*** [0.030]	-0.087** [0.038]	-0.141*** [0.052]	-0.106*** [0.037]	-0.117** [0.053]

**Table 10. Marginal Effects from Active vs. Non-Active Probit Regressions,  
Pooled and Across Cities and Gender (cont'd)**

	<i>Full</i>	<i>Shenyang</i>	<i>Wuhan</i>	<i>Females</i>	<i>Males</i>
House owned by enterprise	-0.041 [0.032]	-0.061 [0.051]	-0.039 [0.042]	-0.040 [0.041]	-0.045 [0.052]
Time since lay-off	-0.010** [0.005]	-0.004 [0.007]	-0.013* [0.007]	-0.010* [0.006]	-0.008 [0.008]
Married	-0.104* [0.056]	-0.034 [0.084]	-0.168** [0.077]	-0.061 [0.050]	-0.084 [0.062]
Female X Married	0.053 [0.069]	-0.015 [0.097]	0.137 [0.105]		
Shenyang	-0.033 [0.031]			0.032 [0.038]	-0.154*** [0.055]
Others employed in HH	-0.020 [0.018]	-0.004 [0.025]	-0.038 [0.028]	0.004 [0.022]	-0.071** [0.032]
Children below age 6	0.004 [0.048]	-0.064 [0.070]	0.060 [0.066]	0.002 [0.062]	0.013 [0.079]
Children age 6 or older	0.046 [0.031]	0.044 [0.044]	0.060 [0.045]	0.029 [0.040]	0.088* [0.050]
Test for sample split; H <sub>0</sub> : Pooling is valid		$\chi^2(17) = 23.81$ [0.125]		$\chi^2(13) = 27.71$ [0.010]	
Pseudo-R <sup>2</sup>	0.036	0.031	0.057	0.029	0.065
N	1946	990	956	1290	656

*Notes:* Robust Huber-White (Huber, 1967; White, 1980) standard errors in brackets under parameter estimates and p-values in brackets under test statistics. Omitted categories are “45+” (age) and “Primary and Junior Secondary” (education). \*\*\*: Statistically significant at 10 percent; \*\*: Statistically significant at 5 percent; \*: Statistically significant at 10 percent.

those with tertiary education (13.5 percentage-points higher than the reference group primary and junior secondary). This result is expected since these workers have a greater chance of obtaining a job and also have a higher opportunity cost in terms of foregone earnings than less educated workers. Disabled workers are less likely to be active by about 15 percentage-points for the sample as a whole; this result is driven by workers in Shenyang and among men.

The impact of family characteristics on labor force participation is not entirely clear from the analysis. Being married has a negative effect on activity status; however, this relationship is no stronger for females than for men. When we run separate probits by gender, negative coefficients are found for married status, but for both men and women, the results are not statistically significant. Similarly, for the full sample, a variable with an interaction between females and married status has the expected positive coefficient but is also statistically insignificant.

Other variables in the model attempt to test specific hypotheses regarding family labor supply decisions. One is whether having others in the household employed affects participation. The result for the full sample is statistically insignificant. This variable is negative and statistically significant for the male sub-sample, indicating that having others in the household employed reduces the likelihood that men will be active. There is no such relationship in the case of women where we might have been more likely to expect to observe this effect. The findings regarding the presence of children in the household are also not consistent with expectations. We constructed separate variables for children below age 6 and children over this age, assuming that the presence of the former would be more likely to affect labor force participation, especially for women. In all models, however, the presence of young children has no significant effect.

The role of lay-off stipend receipt as a determinant of labor force participation appears to be strong. Individuals receiving this allowance were about 10 percentage points less likely to be in the labor force than those without the stipend. This result is consistent across cities and gender. This indicates that stipends provide a disincentive for workers to be active in the labor market. Time since lay-off has a small but statistically significant and negative impact on activity status, indicating that workers either become discouraged over time and/or lose touch with the labor market because of skills obsolescence or erosion of a network for job search.

*Employment.* For those in the labor force, what factors determine whether they were employed or unemployed in mid-2001? To address this question, we estimated probit models where employment status was regressed on individual characteristics and information on job search methods used. Again, equations were estimated for the overall sample and separately for the two cities and genders. Overall, the results are much weaker than was the case with estimating labor force activity, as demonstrated from the much fewer significant results – substantively and statistically (Table 11). In other words, once a decision has been made about labor force participation, whether or not one then subsequently finds work is determined by factors – including unobservables – not included in the model. Also, the results for the test for sample split show that the determinants of employment do not differ across gender and cities, indicating that observables also do not explain differences in employment across gender or cities, conditional on being active.

That being said, a few key results related to human capital do emerge. Tertiary education has a large positive effect on employment for workers from Shenyang and for females (about 15 and 22 percentage-points, respectively). Having received training has large positive impact on employment for men (about 11 percentage-points). There is a positive impact when workers have paid for training in Wuhan, though not in Shenyang.

Most formal job search methods have no or even negative effects on employment. One interpretation of this is that having to resort to these search methods is selective, mainly pursued by (low-quality) workers, whose access to networks and other more effective search methods may be more limited. Workers who are successful in finding work may be able to rely on informal – and ultimately more effective – networks. One piece of evidence consistent with this hypothesis is the positive and significant coefficient on the variable indicating whether other household members are employed.

**Table 11. Marginal Effects from Employed vs. Unemployed Probit Regressions  
(Conditional on Being Active), Pooled and Across Cities and Gender**

	<i>Full</i>	<i>Shenyang</i>	<i>Wuhan</i>	<i>Females</i>	<i>Males</i>
Female	-0.065 [0.085]	-0.111 [0.130]	-0.084 [0.145]		
15-29 years old	0.089 [0.081]	0.124 [0.113]	0.066 [0.127]	0.153 [0.108]	0.025 [0.129]
30-34 years old	0.033 [0.064]	0.062 [0.091]	0.007 [0.095]	0.091 [0.083]	-0.059 [0.108]
35-39 years old	-0.082 [0.054]	-0.091 [0.073]	-0.068 [0.083]	-0.025 [0.074]	-0.157* [0.087]
40-44 years old	0.042 [0.057]	0.131* [0.079]	-0.043 [0.086]	0.110 [0.078]	-0.047 [0.087]
Sr Secondary	-0.007 [0.040]	-0.012 [0.060]	-0.022 [0.058]	0.036 [0.050]	-0.093 [0.069]
Tertiary	0.089 [0.060]	0.148* [0.080]	0.017 [0.098]	0.218*** [0.081]	-0.093 [0.092]
Vocational	-0.007 [0.058]	-0.004 [0.078]	-0.015 [0.089]	0.045 [0.075]	-0.106 [0.095]
Disabled	-0.03 [0.091]	0.011 [0.139]	-0.051 [0.136]	-0.043 [0.112]	0.041 [0.172]
Lay-off Stipend	0.023 [0.046]	-0.015 [0.062]	0.067 [0.071]	0.059 [0.057]	-0.004 [0.080]
House owned by enterprise	-0.002 [0.050]	-0.072 [0.079]	0.037 [0.065]	-0.079 [0.068]	0.118 [0.073]
	Full	Shenyang	Wuhan	Females	Males
Time since lay-off	-0.005 [0.007]	-0.009 [0.011]	-0.001 [0.011]	-0.015 [0.010]	0.013 [0.011]
Enterprise had reemployment center	0.052 [0.043]	0.123** [0.061]	-0.009 [0.063]	0.089 [0.055]	-0.006 [0.070]
Married	0.095 [0.074]	-0.09 [0.132]	0.195** [0.094]	0.064 [0.075]	0.132 [0.087]
Female X Married	-0.041 [0.093]	0.049 [0.143]	-0.065 [0.156]		
Shenyang	-0.014 [0.049]			0.033 [0.062]	-0.066 [0.084]
Received training	0.037 [0.038]	0.024 [0.056]	0.031 [0.054]	0.004 [0.049]	0.112* [0.061]
Paid for training	0.126 [0.078]	-0.029 [0.184]	0.157* [0.090]	0.084 [0.109]	0.147 [0.119]

**Table 11. Marginal Effects from Employed vs. Unemployed Probit Regressions (Conditional on Being Active), Pooled and Across Cities and Gender (cont'd)**

	<i>Full</i>	<i>Shenyang</i>	<i>Wuhan</i>	<i>Females</i>	<i>Males</i>
Others employed in HH	0.044* [0.026]	0.081** [0.035]	0.008 [0.043]	0.021 [0.032]	0.098** [0.048]
Visited reemployment center	0.041 [0.078]	-0.103 [0.157]	0.145 [0.092]	-0.022 [0.106]	0.049 [0.117]
Visited district labor bureau emp. office	-0.079 [0.053]	-0.019 [0.074]	-0.189** [0.081]	-0.021 [0.067]	-0.188** [0.084]
Visited municipal labor bureau emp. office	0.003 [0.057]	-0.134 [0.082]	0.079 [0.080]	-0.007 [0.077]	-0.002 [0.090]
Visited street-level labor bureau emp. office	-0.073 [0.093]	0.093 [0.123]	-0.291** [0.122]	-0.162 [0.105]	-0.053 [0.161]
Visited All-China federation trade union emp. office	-0.083 [0.157]		0.045 [0.201]	-0.273 [0.190]	-0.051 [0.247]
Visited All-China women's federation emp. office	-0.028 [0.150]	-0.263 [0.186]	0.157 [0.199]	-0.2 [0.151]	
Personal contacts told about job	0.016 [0.053]	0.034 [0.076]	-0.025 [0.080]	0.043 [0.068]	-0.008 [0.088]
Saw job advertisement	-0.053 [0.054]	-0.008 [0.082]	-0.113 [0.076]	-0.068 [0.071]	-0.068 [0.090]
Went to job fair	-0.066 [0.076]	0.118 [0.128]	-0.101 [0.100]	0.094 [0.107]	-0.143 [0.124]
Other job search method	-0.289** [0.136]	-0.178 [0.279]	-0.282 [0.205]	-0.249 [0.186]	-0.050 [0.277]
Children below age 6	-0.060 [0.069]	0.093 [0.108]	-0.171* [0.094]	-0.009 [0.092]	-0.182* [0.106]
Children age 6 or older	-0.027 [0.048]	0.066 [0.070]	-0.070 [0.072]	-0.001 [0.065]	-0.065 [0.077]
Test for sample split; H <sub>0</sub> : Pooling is valid		$\chi^2(29) = 34.12$ [0.235]		$\chi^2(25) = 32.51$ [0.144]	
Pseudo-R <sup>2</sup>	0.044	0.058	0.079	0.053	0.089
N	924	483	438	572	350

*Notes:* Robust Huber-White (Huber, 1967; White, 1980) standard errors in brackets under parameter estimates and p-values in brackets under test statistics. Omitted categories are “45+” (age) and “Primary and Junior Secondary” (education). Eleven observations drop out (relative to the active-non active estimation samples) due to missing observations on one or more of the training related variables.

\*\*\*: Statistically significant at 10 percent;

\*\*: Statistically significant at 5 percent;

\*: Statistically significant at 10 percent.

*Self-employment.* This part of the static analysis looks at what factors determine whether those reporting being employed in mid-2000 were in wage employment or self-employed. As we saw in Section 4, wage employees, on average, work fewer hours and earn more on an hourly basis. Moreover, given that the self-employed are likely to be in the informal sector, it would be expected that wage employment would be the preference of many *xiagang* workers in the labor force, especially since their experience is as employees in a formal-sector environment. On the other hand, it should be recalled that most workers who found wage jobs were in precarious employment relationships, often without contracts and benefits.

Similar to the employment regression results reported in Table 11, the probit estimations to explain the factors determining whether employed workers were self-employed or in wage employment are also largely characterized by a lack of significant results (Table 12). Interestingly, however, the differences across cities and gender overall come out very strongly as indicated by the results for the tests for sample split in the bottom of the table. For example, females are much less likely to be self-employed in Shenyang (and hence more likely to be formal employees), while the opposite is true in Wuhan (although not statistically significant).

Certain results support the hypothesis that wage employment is generally preferred and that more marginal workers tend to wind up in self-employment. Education has consistently negative impacts on self-employment status (although not always statistically significantly so). Time since lay-off has consistently positive impacts on self-employment (again, not always statistically significantly). Both of these findings imply that workers move into self-employment either because of a lack of human capital or because they exhaust hope of obtaining a job in the formal wage sector.

Finally, there may potentially be problems of endogeneity for several of the explanatory variables used in the models tested in this section. Accordingly, we provide sensitivity analyses by estimating a restricted version that excludes variables that are potentially endogenous – including training related variables (where applicable), whether there are other employed members in the household, presence of children in the household, and job search methods. The results confirm that the results are robust both in terms of

direction and magnitude and, hence, indicate that endogeneity should not be too much of a concern for these analyses.<sup>11</sup>

**Table 12. Marginal Effects from Self-employed vs. Formal Employee Probit Regressions, Pooled and Across Cities and Gender**

	<i>Full</i>	<i>Shenyang</i>	<i>Wuhan</i>	<i>Female</i>	<i>Males</i>
Female	-0.075 [0.128]	-0.558*** [0.130]	0.331 [0.210]		
15-29 years old	0.114 [0.117]	0.065 [0.175]	0.121 [0.182]	0.300* [0.159]	-0.005 [0.166]
30-34 years old	-0.074 [0.088]	-0.118 [0.133]	-0.046 [0.131]	-0.069 [0.141]	-0.11 [0.135]
35-39 years old	-0.011 [0.081]	-0.156 [0.110]	0.146 [0.118]	0.056 [0.136]	-0.075 [0.118]
40-44 years old	0.040 [0.081]	-0.074 [0.114]	0.195 [0.123]	-0.011 [0.135]	0.138 [0.111]
Sr Secondary	-0.096* [0.058]	-0.118 [0.095]	-0.152* [0.083]	-0.109 [0.085]	-0.105 [0.094]
Tertiary	-0.111 [0.080]	-0.119 [0.103]	-0.216* [0.124]	-0.250** [0.099]	-0.039 [0.126]
Vocational	-0.112 [0.079]	-0.148 [0.110]	-0.027 [0.128]	-0.075 [0.123]	-0.176 [0.119]
Disabled	-0.268** [0.111]	-0.252 [0.158]	-0.278 [0.174]	-0.441*** [0.060]	-0.031 [0.211]
Lay-off Stipend	-0.100 [0.066]	-0.059 [0.089]	-0.109 [0.112]	-0.077 [0.090]	-0.252** [0.121]
House owned by enterprise	0.034 [0.077]	0.023 [0.147]	0.027 [0.099]	0.126 [0.120]	-0.069 [0.105]
Time since lay-off	0.035*** [0.011]	0.022 [0.015]	0.057*** [0.015]	0.061*** [0.015]	0.018 [0.016]
Enterprise reemployment center had	0.051 [0.061]	0.036 [0.087]	0.080 [0.092]	0.046 [0.086]	0.084 [0.106]
Married	-0.002 [0.111]	-0.467*** [0.143]	0.288** [0.128]	0.008 [0.129]	0.006 [0.125]
Female X Married	0.043 [0.139]	0.563*** [0.139]	-0.382* [0.211]		
Shenyang	-0.095 [0.074]			-0.161 [0.102]	-0.136 [0.124]
Received training	0.060 [0.057]	0.078 [0.088]	0.020 [0.084]	0.103 [0.083]	-0.022 [0.088]
Paid for training	-0.299*** [0.107]	0.24 [0.323]	0.396*** [0.128]		-0.104 [0.137]

<sup>11</sup> The results are not presented here but are available upon request.

**Table 12. Marginal Effects from Self-employed vs. Formal Employee Probit Regressions, Pooled and Across Cities and Gender (cont'd)**

	<i>Full</i>	<i>Shenyang</i>	<i>Wuhan</i>	<i>Female</i>	<i>Males</i>
Others employed in HH	-0.016 [0.038]	-0.075 [0.056]	0.071 [0.059]	-0.034 [0.055]	0.041 [0.063]
Visited reemployment center	0.149 [0.115]	-0.205 [0.186]	0.347*** [0.121]	0.277* [0.167]	0.145 [0.198]
Visited district labor bureau emp. office	0.119 [0.088]	0.215* [0.112]	0.053 [0.166]	0.030 [0.119]	0.098 [0.152]
Visited municipal labor bureau emp. office	-0.112 [0.089]	-0.261** [0.114]	-0.117 [0.131]	-0.330*** [0.108]	0.008 [0.141]
Visited street-level labor bureau emp. office	-0.020 [0.174]	0.009 [0.206]	-0.367 [0.235]	0.279 [0.230]	0.031 [0.300]
Visited All-China federation trade union emp. office	-0.238 [0.201]		-0.08 [0.344]		0.097 [0.435]
Visited All-China women's federation emp. office	0.331 [0.264]		0.194 [0.376]		0.015 [0.414]
Personal contacts told about job	0.047 [0.082]	-0.137 [0.114]	0.12 [0.142]	0.357*** [0.114]	-0.244** [0.119]
Saw job advertisement	-0.044 [0.084]	0.204 [0.132]	-0.220* [0.130]	-0.134 [0.123]	0.045 [0.136]
Went to job fair	-0.033 [0.121]	-0.085 [0.177]	0.122 [0.191]	0.046 [0.164]	-0.036 [0.201]
Children below age 6	0.12 [0.102]	0.136 [0.155]	0.118 [0.142]	0.330*** [0.120]	0.068 [0.178]
Children age 6 or older	0.056 [0.074]	0.076 [0.113]	0.018 [0.115]	0.195* [0.110]	-0.031 [0.107]
Test for sample split; H <sub>0</sub> : Pooling is valid		$\chi^2(26) = 45.08$ [0.012]		$\chi^2(24) = 39.92$ [0.022]	
Pseudo-R <sup>2</sup>	0.075	0.106	0.178	0.172	0.072
N	449	219	229	241	192

*Notes:* Robust Huber-White (Huber, 1967; White, 1980) standard errors in brackets under parameter estimates and p-values in brackets under test statistics. Omitted categories are “45+” (age) and “Primary and Junior Secondary” (education). Six observations drops out (relative to the active-non active estimation samples) due to missing observations on one or more of the training related variables.

\*\*\*: Statistically significant at 10 percent;

\*\*: Statistically significant at 5 percent;

\*: Statistically significant at 10 percent.

## 5.2 Duration Analyses: Time until First Job

While section 5.1 looks at the labor market situation at one point in time (at  $t_0+1$ ), this sub-section presents a duration analysis which has the objective of identifying the factors determining how much time it took *xiagang* workers to find their first job after the initial lay off (which may be on or before the “official”  $t_0$  of July 1998, as discussed before). We examine determinants of duration until first job estimating Cox proportional hazard models and controlling for a host of different factors. Additionally, we examine whether the results are sensitive to the first job being restricted to formal sector jobs, only, and also check for the sensitivity of results to the choice of explanatory variables.

Before getting to the results, two issues need to be raised regarding the applicability of this survey for duration analysis. Most importantly, we would optimally like a sample of workers who really wanted to get a job: one might be concerned that some of the workers captured in the analysis are not actually searching for work. For example, those close to retirement might choose to retire earlier than planned as a consequence of the lay-off; similarly, some younger workers might be discouraged, as well, and opt to drop out of the labor force. If so, these workers should really not be in the sample. However, we do not have information to identify those who were not actually seeking employment so we cannot exclude them. Is this a problem? Examining a somewhat finer age distribution than the one used in the descriptive analyses in Section 3 reveals that less than 2 percent of the sample is above the mandatory retirement age (50 years for females and 55 years for males), so that the point regarding potential “early retirees” should not be much of an issue. On the other hand, the inability to exclude those of working age who were truly not looking for work does introduce added noise into the estimations. As a result, any effects will be lower bound estimates of the effects, relative to the estimated effects we would obtain if observing a workers “true” labor market status over time.

The other potential issue is that, while the sample for the duration models should be restricted to workers actually seeking work over the period of unemployment – that is, at the “official” time  $t_0$  (July 1998) and before that time, as well – a substantial number of workers did not actually start job searching – at least not full-time – immediately because they undertook training. However, it is not necessarily the case that those taking training were not

also searching for work at the same time. Given these arguments, and given that we want to compare the results from the duration analyses with those of the static analysis of labor market status determinants presented earlier (while at the same time retaining as large a number of observations as possible), we chose not to exclude these workers receiving training after July 1998. Indeed, we suggest that we are again, in effect, adding noise to the estimation so that any association between training and jobless duration would be a lower bound estimate. To test this, we excluded workers who took their (first) training on or after July 1, 1998 and found substantially higher impact estimates of the training intervention, thus confirming our prior expectations. In sum, while (i) the lack of information on those who did not want to find work and (ii) the presence of some workers who first took training do raise some issues, our assessment is that, with these caveats, the survey appears suitable for duration analysis.

Next, we move to a multivariate framework to simultaneously control for potentially important factors underlying the unemployment duration function. We use the Cox Proportional Hazards Model (CPHM), which requires the least amount of structure imposed on the underlying baseline hazard rate.<sup>12</sup> The results from the CPHM estimated separately for the full sample and across cities and gender are shown in Table 13; notably, from the bottom of the table, the proportional hazards assumption is indeed satisfied for these models/specifications.

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<sup>12</sup> For example, while the CPHM imposes the proportional hazard (PH) assumption, the parametric Weibull models impose both the PH assumption *and* the assumption that the baseline hazard is monotonic. The CPHM therefore effectively allows the form of the duration dependency to be free, which we prefer to imposing a restrictive—and possibly wrong—assumption on the baseline hazard (although this may come at a cost of slightly less precise estimates, due to the looser structural form assumptions). Indeed, it has been suggested that only rarely would there any reason for social scientists to prefer a parametric model over the CPHM, mainly due to the strong theory required to impose the added structure from a parametric specification (Box-Steffensmeier and Jones, 2004: 66-67).

**Table 13. Results from Cox Proportional Hazards Model of Time to First Job (Months)**

	<i>Full sample</i>	<i>Shenyang</i>	<i>Wuhan</i>	<i>Females</i>	<i>Males</i>
Female	1.186 [0.233]	1.371 [0.429]	0.898 [0.275]		
15-29 years old	2.388*** [0.438]	3.058*** [0.742]	1.784** [0.515]	2.905*** [0.701]	1.986** [0.615]
30-34 years old	1.475*** [0.216]	1.728*** [0.343]	1.316 [0.285]	1.563** [0.305]	1.361 [0.321]
35-39 years old	1.189 [0.160]	1.198 [0.230]	1.209 [0.237]	1.267 [0.234]	1.063 [0.223]
40-44 years old	1.027 [0.143]	1.202 [0.239]	0.979 [0.195]	1.131 [0.223]	0.934 [0.188]
Sr secondary	1.103 [0.107]	1.105 [0.160]	1.018 [0.137]	1.150 [0.143]	1.037 [0.167]
Tertiary	1.633*** [0.240]	1.537** [0.303]	1.481 [0.363]	1.846*** [0.380]	1.423 [0.311]
Vocational	1.234 [0.162]	1.310 [0.232]	1.078 [0.228]	1.258 [0.210]	1.269 [0.277]
Received training	1.411*** [0.129]	1.426*** [0.190]	1.341** [0.175]	1.421*** [0.174]	1.416** [0.205]
Paid for training	1.400** [0.236]	1.042 [0.425]	1.441* [0.315]	1.292 [0.328]	1.546* [0.378]
Disabled	0.719* [0.136]	0.637* [0.168]	0.951 [0.274]	0.811 [0.192]	0.634 [0.214]
Xiagang stipend	0.988 [0.114]	1.139 [0.155]	0.723* [0.122]	0.926 [0.142]	1.123 [0.201]
House owned by enterprise	0.971 [0.115]	0.666* [0.154]	1.117 [0.164]	0.899 [0.154]	1.003 [0.170]
Enterprise had reemployment center	1.228** [0.123]	1.207 [0.176]	1.385** [0.200]	1.269* [0.167]	1.161 [0.186]
Married	1.126 [0.202]	1.234 [0.393]	0.942 [0.210]	0.573*** [0.090]	1.062 [0.213]
Female X Married	0.482*** [0.104]	0.525* [0.180]	0.539* [0.180]		

**Table 13. Results from Cox Proportional Hazards Model of Time to First Job (Months) (cont'd)**

	<i>Full sample</i>	<i>Shenyang</i>	<i>Wuhan</i>	<i>Females</i>	<i>Males</i>
Others employed in HH	1.079 [0.067]	1.129 [0.093]	1.017 [0.099] 1.625*	1.082 [0.084]	1.061 [0.110]
Visited reemployment center	1.298 [0.218]	0.636 [0.327]	* [0.341]	1.105 [0.252]	1.593* [0.410]
Visited district labor bureau emp. Office	1.051 [0.118]	1.104 [0.175]	0.902 [0.160]	1.021 [0.149]	0.960 [0.181]
Visited municipal labor bureau emp. office	1.211 [0.145]	1.117 [0.205]	1.301 [0.221]	1.163 [0.185]	1.260 [0.242]
Visited street-level labor bureau emp. office	1.124 [0.222]	0.809 [0.224]	1.380 [0.420]	0.895 [0.239]	1.507 [0.501]
Visited all-China fed. trade union emp. office	1.162 [0.371]	2.636 [1.882]	1.185 [0.447]	1.369 [0.597]	0.749 [0.396]
Visited all-China women's fed. emp. office	1.334 [0.438]	1.147 [0.471]	1.345 [0.724]	1.412 [0.564]	0.972 [0.759]
Personal contacts told about job	1.315** [0.162]	1.510** [0.265]	1.067 [0.189]	1.707*** [0.255]	0.901 [0.201]
Saw job advertisement	0.936 [0.119]	1.058 [0.202]	0.790 [0.143]	0.881 [0.139]	1.030 [0.228]
Went to job fair	1.182 [0.188]	1.343 [0.327]	1.341 [0.303]	1.467* [0.304]	0.976 [0.289]
Other job search method	0.853 [0.391]	0.918 [0.673]	0.738 [0.452]	0.838 [0.494]	0.675 [0.540]
Children below age 6	0.970 [0.159]	0.773 [0.186]	1.151 [0.255]	0.861 [0.192]	1.057 [0.274]
Children age 6 or older	1.093 [0.108]	1.161 [0.168]	1.082 [0.154]	1.171 [0.154]	1.086 [0.179]
Shenyang	1.450*** [0.181]			1.684*** [0.284]	1.155 [0.228]
Test for validity of proportional hazards assumption; H <sub>0</sub> : PH assumption is satisfied	28.70 [0.534]	19.68 [0.903]	26.99 [0.572]	19.24 [0.891]	22.63 [0.752]
N	1919	985	934	1269	650

Notes: Robust Lin-Wei (Lin and Wei, 1989) standard errors in brackets under parameter estimates; robust p-values in brackets under PH test statistics. The Peto-Breslow (Peto, 1972; Breslow, 1974) method is used for handling ties. Omitted categories are "45+" (age) and "Primary and Junior Secondary" (education).

\*\*\*: Statistically significant at 10 percent;

\*\*: Statistically significant at 5 percent;

\*: Statistically significant at 10 percent.

The results are largely consistent with the earlier static analysis. Younger workers are much more likely to become employed more quickly than older workers (45 and older being the reference group). More educated workers generally exit joblessness more quickly than less educated workers, although the effect is only statistically significant for tertiary education and only for the full, Shenyang and female samples. Training has a substantial effect on unemployment duration: for the full sample, for example, the period of joblessness for trainees is about 41 percent less than that of non-trainees. This result is consistent across all five estimation samples. There is a separate effect from having paid for training – although not statistically so in Shenyang and for females – presumably either because training requiring co-payment reveals motivation on the part of the worker or because it may be of higher quality.

Workers from enterprises with a reemployment center obtain a job more quickly than other workers. Only a few other job search methods appear to be successful. Hearing about a job opening from personal contacts come out strongly: for the full sample, for example, workers who heard about a job opening from personal contacts had an unemployment duration, which was about 31 percentage-points lower than other workers. These effects are not statistically significant for workers from Wuhan and for male workers, however. Visiting reemployment center comes out strongly for Wuhan and for males, with about 62 and 59 percentage points shorter spells for those two groups.

Additionally, we conducted two sets of sensitivity analyses. The first is analogous to those done for the static analyses; that is, estimating restricted models where potentially endogenous variables – training related variables, availability of other employed household members, reemployment center usage variables, and child variables – have been excluded. Similar to what was the case for the static analyses, the duration analyses, too, essentially are robust to the specification of explanatory variables.<sup>13</sup> The second sensitivity analysis restricted the sample to exits into formal employment (treating exits into informal employment as censoring events). Again, the results are essentially robust, with the minor caveat here that the training variable generally loses statistical significance (though being

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<sup>13</sup> The results are not presented here but are available upon request.

statistically insignificant only for the male sample), although the point estimate is roughly the same.

Before concluding, the results for training should be briefly discussed since they differ between the duration analysis and the static analysis. While the effect was virtually nil in the static analyses, we found a strong and consistently negative effect of training on the time needed to find a first job. Similarly, the estimated impacts in the (static) training evaluation in Bidani *et al.* (2004) of these same data also were mixed, affecting employment positively in Wuhan but not in Shenyang, while the opposite was found to be true for earnings. How can we reconcile these results? The static results are a snapshot of the situation at  $t_0+1$  (i.e., end of May to end of June 2000) and therefore do not take into account any dynamic effects during the period since being displaced, which in many cases were before the “official”  $t_0$  of July 1998. Also, workers may simply obtain jobs of low quality, which they subsequently leave, and/or jobs of short duration. Training may therefore positively affect the probability of obtaining the first job, while not affecting employment in the long term. The duration results can capture such dynamic effects.

## **6. Conclusions and Policy Implications**

There have been few studies addressing the question of how workers laid off from China’s state sector subsequently fare in the labor market. However, given the scale of the labor adjustment associated with SOE restructuring, this is an important issue. The analysis presented in this paper is based on a survey of displaced workers in May-June 2000, 23 months after they were observed in *xiagang* status and without work. The period covered by the study was characterized by intense restructuring of the state sector. Moreover, the samples of workers were drawn from two very large cities, Shenyang and Wuhan, where the state sector was large, loss-making SOEs were common, and local labor markets were creating few new jobs. In other words, this was a difficult environment for the workers covered in the analysis – however, probably not as difficult as that facing displaced workers in remote or mono-industry communities.

The labor adjustment challenge was further complicated by the characteristics of the *xiagang* workers in the sample – though our sample seems representative of what is known about workers who have been laid off from China’s state sector. Almost one-half had no

more than junior secondary education and over 70 percent were at least 35 years old. Most had had very long tenures with their SOE and three-quarters had been displaced for at least one year when we first observed them.

Given all of these factors, it is perhaps not surprising that the surveyed workers had a great deal of difficulty in the labor market in the nearly two years covered by the study. By mid-2000, only 48 percent were in the labor force and this group was relatively evenly split between being employed and looking for work; the unemployment rate among those reporting they were in the labor force was just over 50 percent. This unemployment rate is a low estimate because it does not include the presumably significant numbers of discouraged workers who did not have jobs but were not searching. It seems that many who did find employment were in precarious situations. About 45 percent were self-employed, which we equate with being in the informal sector and without formal protections. Compared to those who found wage employment, the self-employed worked long hours and had low (and widely distributed) earnings. Even among wage employees, the large majority did not have a contract or access to benefits like social insurance.

Multivariate analysis was carried out to explain the determinants of the labor market outcomes of the *xiagang* workers. This includes both static analysis that is based on a snapshot of the status of these workers in mid-2000 and duration analysis that observes the transition probabilities of workers into employment since their initial lay-off. The analysis concludes that men, younger workers, and the better educated are most likely to remain in the labor force and, thus, to find employment and to find it more quickly than other types of workers. Human capital is directly related to the kind of work obtained, with higher educational attainment associated with wage employment rather than self-employment.

The research also generates results on some policy-relevant variables. At least in the period covered by this study, China's principal labor adjustment strategy has been to provide income compensation to job losers through early retirement and layoff stipends provided by the SOEs. Our results show that this created disincentives for labor force participation/job search as evidenced by the low rates of activity for "older" workers – in China's case, just 35 years of age and over – and those receiving the layoff stipends. In other words, the study shows evidence of job-search disincentives from income support in China, as observed in

other countries. Nonetheless, compensating job losers seems to be a realistic strategy for policy-makers to manage what is a transitional problem of rationalizing the state sector.

Our results are somewhat mixed in terms of how useful active labor market programs can be in helping *xiagang* workers find new jobs. There seems to be little payoff from formal job search institutions, such as reemployment centers and labor bureaus, although job fairs seem to make some difference. Informal networks appeared to be much more beneficial. The evidence on the value of retraining was not completely unambiguous; however, the duration analysis did show that training has a positive impact on how quickly displaced workers find employment. These sorts of active interventions are relatively new in the Chinese context and improved outcomes are likely if policy-makers learn from the considerable international experience that has accumulated.

The main conclusion of the analysis is to underline the significant challenge associated with labor restructuring in China's state sector. While large-scale restructuring represents a difficult problem in all countries, the situation in China has its own particular complications because of the scale of the layoffs and the mismatches between the characteristics of affected workers and the needs of available jobs (both in terms of skills and location, as well as culture). A particularly serious issue is the loss of access to social insurance; very few workers seemed to retain coverage in the social insurance programs (i.e., health and pension) either because they left the labor force or found work in the informal sector or in firms that did not provide coverage. This situation may have improved in the years since the survey but, nonetheless, bears close attention from policy-makers.

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## APPENDIX A: Definitions of Variables

### (1) Dependent variables and labor market status:

#### (i) Dependent variables:

Active:	1 if formal employee, self-employed, employer or unemployed but searching, 0 otherwise.
Working (only defined if active):	1 if formal employee, self-employed or employer, 0 otherwise.
Self-employed:	1 if self-employed, 0 if formal employee.
Duration of unemployment:	Number of months unemployed since July 1998.

#### (ii) Labor market status:

Employee:	1 if formal employee, 0 otherwise.
Self-employed:	1 if self-employed <i>or</i> employee working for either “family business” or individual/private household, 0 otherwise.
Employer:	1 if employer, 0 otherwise.
Retired:	1 if retired, 0 otherwise.
Out of LF, of working age:	1 if not working within the past 7 days, not seeking work within the past 7 days, Not available for work and not retired, 0 otherwise
Unemployed (searching):	1 if unemployed and searching work, 0 otherwise.

### (2) Explanatory variables:

15-29 years old:	1 if 15-29 years old, 0 otherwise.
30-34 years old:	1 if 30-34 years old, 0 otherwise.
35-39 years old:	1 if 35-39 years old, 0 otherwise.
40-44 years old:	1 if 40-44 years old, 0 otherwise.
45+ years old (reference):	1 if 45 years old or more, 0 otherwise.
Female:	1 if female, 0 otherwise.
Time since Lay-off:	Time since lay-off (years).
Disabled:	1 if disabled, 0 otherwise.
Married:	1 if married, 0 otherwise.
Others employed in HH:	Number of others in the household who are employed.
Lay-off stipend:	1 if it was customary for enterprise to pay displaced workers a Monthly living stipend when workers were displaced, 0 otherwise.
Children below 6:	Number of children in household less than 6 years old.
Children 6 or more:	Number of children in household 6 years or older.
Female X Married:	Interaction of Female and Married.
<i>Education:</i>	
Primary/Jr Secondary (reference):	1 if highest completed education is primary or Jr Secondary, 0 otherwise.
Sr Secondary:	1 if highest completed education is Sr Secondary, 0 otherwise.
Tertiary:	1 if highest completed education is tertiary, 0 otherwise.
Vocational:	1 if highest completed education is vocational, 0 otherwise.
<i>Training:</i>	
Received training	1 if received training, 0 otherwise.
Paid for training	1 if paid for training, 0 otherwise.

## APPENDIX A: Definitions of Variables (cont'd)

### *Job search methods:*

Visited enterprise reemp. center:	1 if went to the enterprise re-employment center, 0 otherwise.
Visited district labor bureau emp. office:	1 if went to a district labor bureau, 0 otherwise.
Visited municipal labor bureau emp. office:	1 if went to a municipal labor bureau, 0 otherwise.
Visited street-level labor bureau emp. office:	1 if went to a street-level labor bureau employment office, 0 otherwise.
Visited all-China fed. Union emp. office:	1 if went to an all-China federation trade union employment office, 0 otherwise.
Visited all-China women's fed. emp. office:	1 if went to an all-China women's federation employment office, 0 otherwise.
Personal contacts told about job opening:	1 if personal contacts told about job opening, 0 otherwise.
Saw ad in shop window or newspaper:	1 if saw an ad posted in a shop window or in a newspaper, 0 otherwise.
Went to job fair:	1 if went to a job fair, 0 otherwise.
Other job search method:	1 if other job search method, 0 otherwise.

### *Occupation (in enterprise prior to lay-off):*

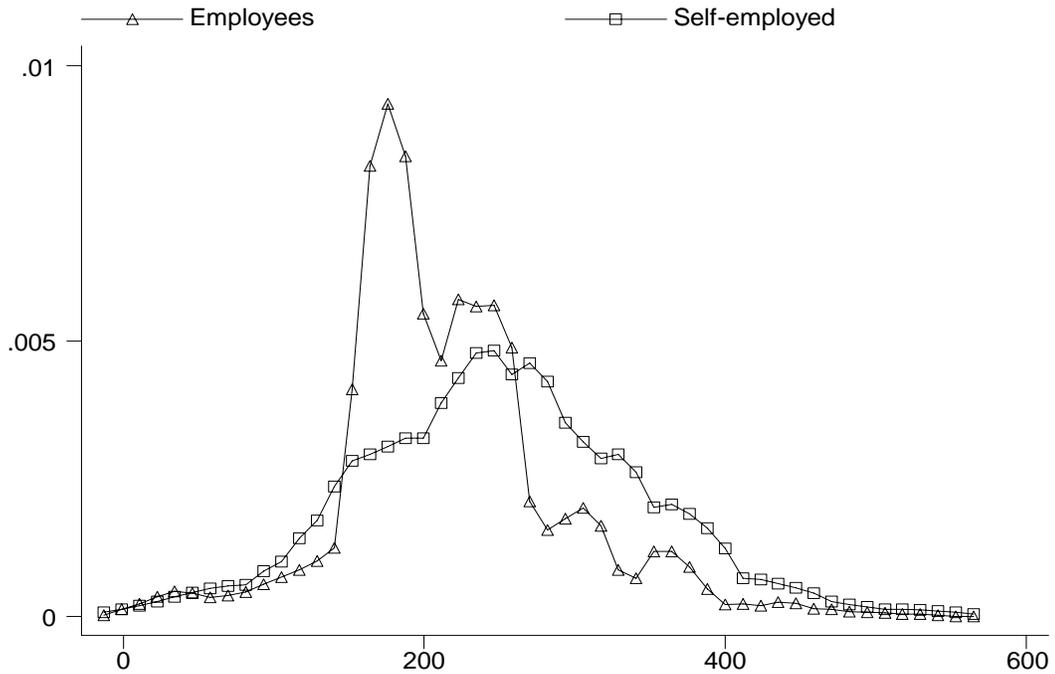
Manager:	1 if occupation was manager, 0 otherwise.
Professional:	1 if occupation was professional, 0 otherwise.
Technician:	1 if occupation was technician, 0 otherwise.
Clerk:	1 if occupation was clerk, 0 otherwise.
Service, retail:	1 if occupation was service/retail, 0 otherwise.
Agriculture, fishing:	1 if occupation was agriculture/fishing, 0 otherwise.
Craft worker (reference):	1 if occupation was craft worker, 0 otherwise.
Machine operator:	1 if occupation was machine operator, 0 otherwise.
Unskilled labor:	1 if occupation was unskilled labor, 0 otherwise.
Shenyang:	1 if residing in Shenyang, 0 if residing in Wuhan.

**APPENDIX B: Kernel Density Plots of Earnings and Hours, Formal Employees and Self-employed:**

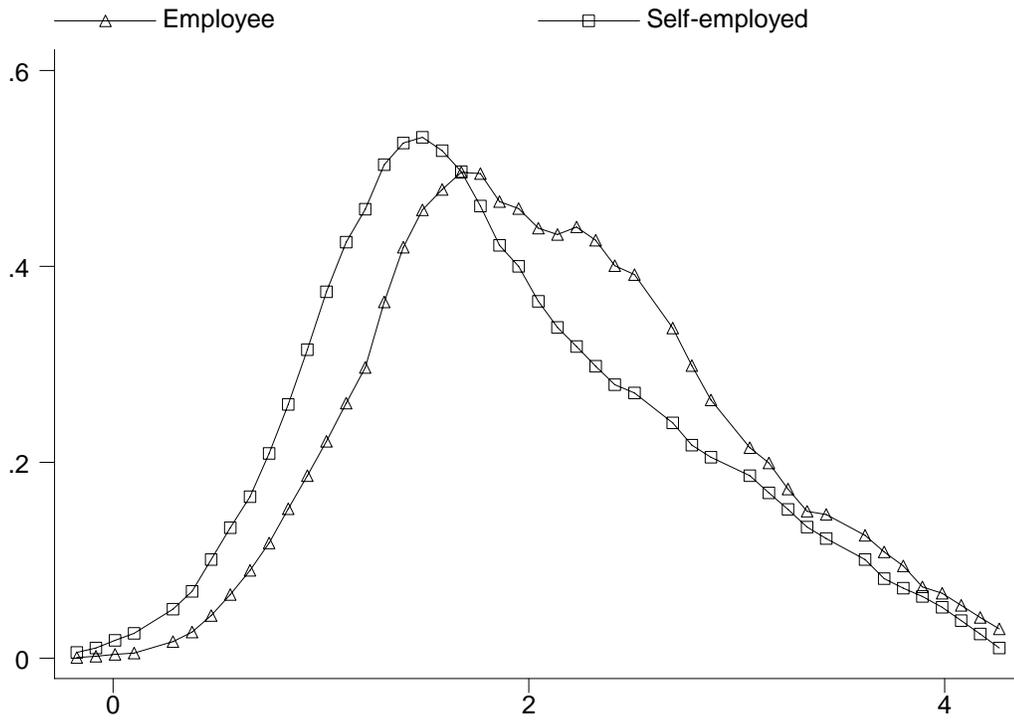
**Figure B1 Kernel Density Plots, Earnings Per Month (Yuan), Excluding Top 10 Percent**



**Figure B2 Kernel Density Plots, Monthly Hours**



**Figure B3 Kernel Density Plots, Earnings Per Hour (Yuan), Excluding Top 10 Percent**



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### Summary Findings

The economic restructuring in China over the past decade has resulted in displacement of millions of workers who had been employed in the state sector. This has posed tremendous challenges economically, socially, politically, and culturally. For several years, Chinese policies attempted to cushion the shock by requiring state-owned enterprises to provide living allowances and reemployment services to workers that had been displaced. There have been relatively few empirical studies that have tracked the experiences of these displaced or xiagang workers. This study uses survey data from two large industrial cities to analyze the labor market situation of over 2,000 workers two years after they had been observed as displaced and unemployed. The findings point to the high rates of labor force withdrawal of xiagang workers and the relatively low proportion who find another wage job in the formal sector. It also documents the large number of workers who find work in the informal sector which seems to act as an important safety net. Not surprisingly, education is an important determinant of post-layoff labor market outcomes. Active labor market interventions do not seem to make a substantial difference although there is some evidence from the duration analyses that training does help workers find employment more quickly than they would have otherwise.

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