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Benu Bidani
World Bank

Chor-ching Goh
World Bank

Christopher J. O'Leary
W.E. Upjohn Institute for Employment Research, oleary@upjohn.org

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Authors

Benu Bidani, *World Bank*
Chor-ching Goh, *World Bank*
Christopher J. O'Leary, *W.E. Upjohn Institute for Employment Research*

Upjohn Author(s) ORCID Identifier

https://orcid.org/0000-0002-3372-7527

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Benu Bidani,* Chorching Goh,* and Christopher J. O'Leary**

*World Bank
1818 H Street, N.W.
Washington, DC 20433, USA
Tel: (202) 473-8143
Fax: (202) 522-1668
Bbidani@worldbank.org
Cgoh@worldbank.org

**W.E. Upjohn Institute for Employment Research
300 South Westnedge Avenue
Kalamazoo, MI 49007, USA
Tel: (616) 343-5541
Fax: (616) 343-3308
Oleary@we.upjohninst.org

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ABSTRACT

This study evaluates the effectiveness of training programs for workers retrenched from Chinese state-owned enterprises in the cities of Shenyang and Wuhan. A variety of impact estimators were applied, however ordinary least squares (OLS) controlling for observable characteristics was robust. We find that training dampens reemployment prospects in Shenyang but improves them in Wuhan. Training impact estimates computed by propensity score and log-odds ratio matching imposing various support condition rules, yielded estimates very similar to those from the OLS. The estimates suggest that participation in training reduces the probability of being employed one year after participation by about 6 percentage points in Shenyang, but increases the employment likelihood by about 8 percentage points in Wuhan. Among those who are reemployed, training does not have any effect on earnings.

We find that among training participants, those who contributed part or all of their training costs are significantly more likely to find employment than those who did not contribute. Requiring workers to share in the cost of training could make the training system demand-driven. Workers may only choose to pay something for programs that could potentially enhance their employability or productivity.

In Shenyang, the government was very ambitious in attempting to re-train all retrenched workers. However, the government barely provided the assistance stipulated in the May, 1998 national "Re-employment Program." Only a small proportion of workers dismissed in Shenyang received their living stipend or were provided access to re-employment centers. In contrast, the government in Wuhan was not active in retraining; however, almost all retrenched workers received a living stipend and had access to re-employment centers for job search and other assistance. Moreover, a larger proportion of jobless workers in Wuhan still had their medical expenses paid by the enterprises compared to those in Shenyang. We believe that the Wuhan municipal labor bureau is actively monitoring job seekers to ensure that needed services and assistance are provided, as well as taking initiatives to promote a favorable environment to absorb laid off workers into productive activities.

Without knowing more about the nature and organization of training programs; the local labor market conditions; and the extent of government efforts to redeploy surplus labor in the two cities, we can only speculate about reasons for the different outcomes found in Wuhan and Shenyang. It may be that training programs are more relevant and of better quality in Wuhan, such that participants receive both additional skills and more job search assistance. In Shenyang, it may be the case that by trying to serve everyone, resources have been spread too thin so that training is of inferior quality.

Since our evaluation is not based on random assignment, we cannot dismiss the possibility that participation in training is influenced by unobservable characteristics. We do observe differences in observable characteristics between the participant and the comparison groups in both cities, with differences being larger and more significant in Shenyang.

Has Training Helped Employ Xiagang in China? A Tale from Two Cities.

1. Introduction

By 1998, reform of China's state-owned-enterprise (SOE) sector had entered a critical phase. Accelerated efforts to increase efficiency involved downsizing and rising labor redundancy. A sizeable proportion of those laid-off from SOEs remained attached to their prior employer. Such workers are known as xiagang. SOEs provide xiagang an unemployment stipend, contributions to social health insurance and pension funds, and often times housing.

In response to the problem of labor redundancy in SOEs, the Government instituted the "Reemployment Project" on a pilot basis in 30 municipalities in 1994 and expanded the project to 200 cities by 1996. The Reemployment Project was administered by labor bureaus in the municipalities, involved enterprises, training centers and industrial trust centers. The project focused mainly on providing a range of active labor market policies designed to foster the re-deployment of unemployed workers into productive work. The project focused on xiagang, but officially any unemployed worker or new entrant could be served. The project included such active labor market policies as job search assistance and counseling (through job fairs and job information systems); training; wage subsidies; tax break for enterprises that employed surplus workers; and assistance for self-employment including lump-sum payments, preferential licensing and tax treatment.

At the end of 1999, there were 9.4 million laid off workers in China, of which 6.5 million were from SOEs.[1] While no unemployment figures based on international statistics are available for China, the official "managed" unemployment rate, which refers only to the urban labor force, was 3.1% or 5.75 million registered unemployed people at the end of 1999. The inclusion of xiagang among the unemployed would significantly increase the unemployment rate to 8.2%. There are wide variations across regions in both unemployment and the extent of xiagang problem. The unemployment rate ranged from a low of 0.6 percent in Beijing to a high of 4.0% in Guizhou and 4.5% in Ningxia.

Our aim in this study is to provide reliable estimates of the net impact job skill training provided to xiagang through municipal labor bureaus. We follow a quasi-experimental design for the study, meaning that we randomly select groups of xiagang training participants and non-participants and conduct follow-up surveys to identify differential labor market success. Our surveys were conducted in the high unemployment city of Shenyang in Liaoning province of northeastern China, and the moderate unemployment city of Wuhan in Hubei province in central China on the Yantzee river. This paper reports estimated training impacts on employment and earnings.

[1] China Statistical Labor Yearbook, 2000

2. Institutional and Labor Market Context of Training

In May 1998, the Central Party Committee and the State Council jointly organized a conference on Safeguarding the Basic Living Standards of Laid-off Workers in SOEs and their Reemployment. After the conference, the Central Party Committee and the State Council jointly issued an outline of various policy measures adopted. Among them were:

(i) Reemployment service centers will be set up at all enterprises with xiagang. The main functions of the reemployment service centers were to pay the basic living subsidy, pension, unemployment and health contributions for xiagang, provide employment services such as job referral, job counseling, and training. Xiagang could stay registered with employment service centers for a maximum of three years. The amount of the subsidy paid was set locally by each municipality but declined progressively each year. For example, in Shanghai the living subsidy for a laid-off worker was 244 RMB ($30) per month for the first year and 204 RMB for the second year. In Wuhan the laid-off living subsidy was significantly lower at 120 RMB per month. Laid-off workers in Shenyang received 192 RMB the first year, 156 RMB the second year. In addition, Shenyang reemployment centers contributed to workers health insurance (20 RMB per month), pension (78 RMB per month) and unemployment insurance (5.7 RMB per month). The living subsidy was revised upward by 30 percent in October 1999. After exhausting the three years of living subsidy, workers who remained unemployed would terminate their labor relations with their enterprises and then be transferred to the unemployment insurance system for a period of two years. The unemployment insurance subsidy was lower than the living subsidy. Finally, after two years of being on unemployment insurance, workers could be entitled to a minimum living subsidy, which was lower than the unemployment insurance benefit. The resources for providing these services to workers would come from enterprises (contributing a third) and the government (contributing two-thirds).[2] Government funding could come from the central government in poor provinces, such as Guizhou or from the local government in well-off regions such as Beijing.

(ii) A range of active labor market policies (e.g., training, job information, job referrals, career information, etc) will be adopted to strengthen labor market development.

(iii) Other policy measures included development of the tertiary industry, particularly community services; encouraging the development of small and medium enterprises; facilitating self-employment including credit support; and expediting social security reform particularly in the areas of pensions, health care and unemployment insurance. The contribution rate of unemployment insurance would increase subsequently to 3% from 1% beginning in the latter half of 1999, with the increment of 2% being shared equally by employers and employees.

[2] Half of the government contribution could come from "society" which includes unemployment insurance funds.

Table 2.1 GDP and Employment Growth Rates, and Unemployment Rates

	GDP Growth Rate			Employment Growth Rate			Urban Employment Growth Rate			Unemployment Rate		
Year	**National**	**Liaoning**	**Hubei**	**National**	**Liaoning**	**Hubei**	**National**	**Liaoning**	**Hubei**	**National**	**Liaoning**	**Hubei**
1995	10.5	7.1	14.6	1.1	--	--	3.7	--	--	2.9	2.7	3.1
1996	9.6	8.6	13.2	1.3	-0.2	-0.5	3.8	-0.7	0.3	3.0	3.6	3.5
1997	8.8	8.9	13.0	1.1	1.6	0.6	2.0	-1.5	11.4	3.1	3.9	3.5
1998	7.8	8.3	10.3	0.5	-11.9	-3.4	2.3	-22.5	-15.6	3.1	3.4	3.3
1999	7.1	8.2	8.3	0.9	-1.2	-1.7	1.6	-3.1	-5.1	3.1	3.5	3.3

Source: *China Statistical Yearbook; China Labor Statistical Yearbook,* various issues.

China's GDP growth rates over the past few years have been enviable but employment growth rates were modest. Urban employment has been growing slowly, but rural employment has contracted significantly. However, provinces differ from the national averages in GDP and employment growth rates, unemployment rates, and the extent of xiagang problems. Unemployment rates in Liaoning (of which Shenyang is the capital) and Hubei (of which Wuhan is the capital) have been higher than the national average since 1996, even though their provincial GDP growth rates have exceeded the national average since 1997 (Table 2.1). Despite the relatively high output growth, employment has been falling in Liaoning and Hubei, with even larger employment reduction in their urban areas in 1998 and 1999.

SOEs continued to be the dominant employer in 1999, with 55 percent of all urban employment in 1999 being in SOEs. Another 11 percent of the workforce was employed in collectively owned enterprises; the private sector was becoming an important source of employment, with 22% of national employment. Liaoning and Hubei showed similar patterns, with even larger shares in private employment (see Table 2.2).

Table 2.2: Urban Employment by Ownership

		Percent employed in			
Urban Employment 1999	**Total employment (millions)**	**SOE**	**Collective**	**Other ownership**	**Private**
National	210.14	55.0	11.0	11.8	22.2
Liaoning	8.575	52.2	13.3	9.9	24.6
Hubei	8.025	55.4	9.6	7.6	27.5

Source: China Labor Statistical Yearbook,2000

The laid-off workers in reemployment centers in 1999 in both Wuhan and Shenyang were about 47 percent female, but the proportions of female in the urban labor force in the Hubei and Liaoning provinces were 28 and 29 percent, respectively. By age, the workers were concentrated in the under 35 and 35-46 year olds, and were among the less educated with the bulk coming from those with junior middle school and less (Table 2.3)

Table 2.3: Characteristics of Laid-off Workers in Reemployment Service Centers, 1999

		% distribution by educational attainment				% distribution by age		
Province	**Total workers in Re-employment center**	**% junior middle**	**% secondary/technical**	**% college or higher**	**% female**	**<=35 years**	**35-46 years**	**>=46 years**
Liaoning	727365	62.8	28.6	8.7	47 3	35.4	44.2	20.4
Hubei	587950	54.5	40 5	5.0	47 3	33.5	48.1	18.4

Source: China Labor Statistical Yearbook

Table 2.4 indicates that laid-off workers in the reemployment service centers in Hubei are much more likely to be paid all basic living expenses (88%) relative to workers in Liaoning

(59%) Almost 16 percent of Liaoning workers in the reemployment service centers do not receive any basic living expenses, versus only 4 percent in Hubei. Just about half of the laid-off workers in Hubei have been in the reemployment service center for less than a year and none stay beyond 2 years. In Liaoning, about 37 percent have been in the reemployment service center for less than a year, and 12 percent have stayed for over 2 years.

Table 2.4: Laid-off Workers in Reemployment Service Center – Receipt of Living Subsidy and Duration in Center, 1999

Province	Total workers in Re-employment service center	% distribution by status of basic living expenses			% distribution by duration in the reemployment service center		
		All living expenses paid	Not all living expenses paid	No living expenses paid	< 1 year	1-2 years	2-3 years
Liaoning	727365	58.5	25.6	15.9	36.7	50.9	12.4
Hubei	587950	87.7	8.3	4.0	52.5	47.5	0.0

Source: China Labor Statistical Yearbook, 2000

3. Prior Evaluations of Job Skill Training

A large literature exists on the evaluation of training programs, primarily in the United States. Heckman, Lalonde and Smith (1999) provide a comprehensive review of impact evaluations in the OECD countries; they also present the theoretical framework, evaluation methodologies, and lessons from 30 years of research in this area. Despite the controversy about the sensitivity of quasi-experimental estimates, quasi-experimental estimates have usually led to qualitatively similar policy conclusions as studies based on experimental evaluations.

Because of government aims to reduce reliance of low-income persons on various forms of social assistance, training programs in the United States focus mainly on the economically disadvantaged rather than displaced workers. Experimental and quasi-experimental evaluation of programs in the United States find that impacts of training differ by demographic and skill groups. The impacts of training programs in the United States tend to raise earnings of economically disadvantaged adult women; however, impacts on adult males are less consistently positive. Training is also found to improve employment prospects of the low-skilled.

Focusing on training of retrenched workers, Dar and Gill (1998) summarize results of eleven studies (three in the United States, four in Sweden, and one each in Australia, Canada, Denmark, and France). These studies deal primarily with plant closures or enterprise restructuring that lead to massive layoff. Five of the studies (one in Australia, Canada, and Sweden and 2 in the United States) use quasi-experimental approaches and the rest adopt non-scientific techniques that do not select any comparison groups. The latter are not useful for examining effectiveness of the programs. Training was predominantly classroom-based with assistance also provided for job search. Studies with quasi-experimental evaluations find that there is only weak evidence in very selective cases where training programs help re-employment of participants. In most cases, there is no statistically significant difference in employability

between the trained and the comparison groups. Post-training earnings of participants in all cases are not better than those in the control group. In some cases, participants' post-training earnings are even lower.

Very little is known about training programs in developing countries. Training programs in Latin America and Eastern Europe which have been evaluated serve not only the retrenched. Galasso, Ravallion and Salvia (2001) study the Argentinian *Proemplio* experiment which includes wage-subsidy vouchers and training for workfare participants. They find that the reemployment prospects are better for those who took up training, but these workers also hold wage-subsidy vouchers. The experiment does not have a category of training-only. Jimenez and Kugler (1987) examine Colombia's national in-service training systems (*Servicio Nacional de Aprendizaje*) which are open to anyone interested in getting training. They find that once socio-economic characteristics of trainees are controlled for, impacts of training courses are negligible on earnings. Revenga, Riboud and Tan (1994) evaluate the re-training program (*Probecat*) for unemployed and displaced workers in Mexico. They find that participation in training shortens the mean duration of unemployment of men and women; post-training earnings vary systematically by levels of schooling attainment, and are higher among male trainees (but not women). In Eastern Europe, O'Leary, Kolodziejczyk and Lazar (1998) find that retraining programs for the unemployed in Hungary and Poland are cost-effective. The study provides information on the effectiveness of publicly provided training for retrenched workers in a developing country in transition from a planned to market economy.

4. Data

4.1 Selection of Training Participant and Comparison Groups

Our objective was to do a rigorous evaluation of training provided to xiagang. Since there was no intent to evaluate this training when the program began, the evaluation was designed ex-post and had to rely on the available information. The next several paragraphs summarize how our data for analysis was selected and gathered.

In Shenyang, we started with a list of 120,000 laid-off workers registered with the labor bureau. This list was derived from a census which required each SOE to provide a list of workers who were laid off at different times before July 1998. It was believed to be a relatively complete census. The sampling procedure stratifies districts and then enterprises. We confined our sampling to the Dadong, Tiexi and Heping districts in Shenyang to facilitate field survey work. Dadong and Tiexi have the largest concentration of xiagang. Five enterprises from each of the six industries — textile, construction, metallurgy, petrol and chemical, light industry, and machinery — were selected with probability proportional to the number of xiagang. Then a sample of 3,461 workers was randomly selected from the list of xiagang in all 30 SOEs.

The training sample in Shenyang was selected from the training registers of the Dadong District Skilled Workers School, the Tiexi District Skilled Workers School, and the Heping District Skilled Workers School. The training conducted in Shenyang was fairly standard being a uniform one-month in duration (132 hours of classroom training). All those who completed

their training during August-September 1998 were included in the master training list from which our sample is drawn. Only workers with complete addresses were included, and workers with multiple training were included only once. Thus, the final sample was 1,652 workers.

The comparison group in Wuhan was based on a census similar to that in Shenyang, but it was believed to be less complete. The census was done in July, August and September 1998, and represented the stock of workers who were laid off by that time. The list of laid-off workers was computerized, and 2,118 workers were selected randomly from these files.

Instead of compiling the training sample from the training institutions directly as in Shenyang, we received the master list of trainees from the Wuhan Labor Bureau. The training sample in Wuhan was more diverse. The location or sponsors of training programs included the Labor Bureau, employment and training centers at the city and district level, skilled workers schools, sector training centers and other training institutions. The duration of training ranged from one to six months. To get an adequate sample, we included those trained between July 1998 and December 31, 1998. A final sample of 1,666 workers was randomly selected after deleting those who participated in multiple training, and keeping only those with contact information.

4.2 Survey Field Work

A draft questionnaire was prepared by the Bank team and this was revised by our counterparts in the Chinese Institute of Labor Studies. The team from the Institute of Labor Studies was responsible for implementing the data collection. Survey field work began towards the end of May 2000, and was completed by June 2000. Successful interview rates were highest for the Shenyang participant group (61%) and lowest for the Shenyang comparison group (48%). Wuhan's rates were 51% for the participant group and 55% for the comparison group. The survey teams indicated that inaccurate contact information was the primary problem. In many cases, the address on the identity card of workers differed from their actual residence.

To analyze non-response bias we collected basic demographic information (age, gender and education) for the comparison group and the training samples in the whole sample before survey work. We then compared the samples of those interviewed with those who were not interviewed to determine if there is a significant bias through the non-response and non-contact.

The Shenyang sample interviewed, was statistically different on the basis of age, gender and education from the sample that was not contacted. The interviewed sample was a year older, significantly more female, and better educated. The interviewed sample in Wuhan, as a whole, differed from the non-interviewed only in age, being on average a year older than the non-interviewed sample.

4.3 Samples for the Analysis

Beginning with the number of individuals interviewed (line 4 in Table 4.1), we created three types of samples for analysis. The smallest and most restricted samples were derived by excluding individuals from the participant group who did not participate in training and

excluding individuals from the comparison group who did participate in training. Line 6 shows the number of individuals in each group in this case. The medium samples increased the sample size of the participant group by adding in those individuals from the comparison group who received training. The largest sample augments the medium size sample by adding in those individuals in the training group who did not receive training into the comparison group.

Table 4.1: Sample Size for the Training Evaluation

		Shenyang		Wuhan	
		Participant	**Comparison**	**Participant**	**Comparison**
Line 1	Total interviews attempted	1644	2419	1612	2052
Line 2	Deletion of duplicates*	-5	-4	-31	-18
Line 3	Sample Pool	1639	2415	1581	2034
Line 4	Number of individuals actually interviewed	1007	1158	826	1137
Line 5	Deletions**	-5	-97	-183	-195
Line 6	Smallest samples (most restricted)	1002	1061	643	942
Line 7	Additions to participants from comparison	97	0	189	0
Line 8	Medium samples (increased participants)***	1099	1061	832	942
Line 9	Additions to comparison from participants	0	5	0	183
Line 10	Largest samples (increased comparison groups)****	1099	1066	832	1125

*Contact was attempted at the household of each person selected for inclusion in the participant and comparison samples. Extensive data was collected on the prime respondent and limited information was gathered on other household members. Observations were deleted in instances where it was impossible to clearly identify the prime survey respondent in a household. This resulted in deletion of 9 observations from the Shenyang sample and 49 from the Wuhan sample.

**Persons originally in the participant group who responded that they had not received training were deleted from the sample. Persons originally in the comparison group who responded that they had received training, and gave detailed information on the start date, duration, provider, and type of training were deleted from the comparison group.

***Persons originally in the comparison group who responded that they had received training, and gave detailed information on the start date, duration, provider, and type of training were added to the treatment group. For Wuhan, 6 of the people removed from the comparison group for claiming to have received training were not added to the participant group because they did not give detailed information on the start date, duration, provider, and type of training.

****Persons originally in the participant group who responded that they had not received training were added to the comparison sample.

4.4 Are the Small, Medium and Large Samples Different?

The validity of augmenting the smallest samples was tested by homogeneity tests on key exogenous variables to see if adding to samples statistically affects their mean composition in terms of observable characteristics. There were no significant differences in most variables between the small and the larger samples. Even in Wuhan where a large fraction of the participant sample (22 percent or 183 individuals out of 862) did not receive training, differences between the samples are sufficiently small. The means of the demographic characteristics, and the occupation and industry of the laid-off workers are statistically indistinguishable.

4.5 Are the Comparison Groups Different from the Participant Groups?

We find that differences between the comparison and participant groups exist for demographic variables, occupation, and industry and other firm characteristics (firm type, firm

size) from which the workers were laid-off in both cities, but are more significant in Shenyang than in Wuhan. The participant group in both cities is likely to be younger and has a significantly higher fraction of females. Participants in Shenyang are less likely to be married and significantly better educated than the comparison group members. These differences do not exist in Wuhan. The occupational structure of the participant and comparison groups was more similar in Wuhan, with two differences: a higher proportion of the participant group was in the categories of technician and machine operators. In Shenyang, the occupational structure differed more significantly with a higher share of the participant group in the professional, clerical, and services categories; and a lower percentage of them in the craft and machine operators. Thus, it would be misleading to compute impacts as a single unadjusted difference of means. We will apply a variety of methodologies which allow us to control for observable differences across the participant and comparison groups while computing the program impacts.

We identified significant differences between the comparison and participant groups in terms of their basic demographic variables, distribution of occupations and industry, firm sizes and firm type of their pre-layoff enterprises, as well as employment outcomes after being laid off. Table 4.2 shows that in both cities, workers in the participant group had a shorter job tenure at the enterprise from which they were laid off. In Wuhan laid-off workers from the participant group had worked 12.2 years at their enterprise and those in the comparison group 13.6 years. In Shenyang, tenure for the participant group was 11.3 years and that for the comparison group, 13.8 years. There is also a significant difference in the unemployment duration at the survey date. In Shenyang, workers from the comparison group on average were laid-off 4.5 years prior to the survey date compared to 4.2 years for the participant group. This picture is reversed in Wuhan with workers in the participant group having been laid-off longer (5.3 years) than the comparison group (4.2 years).[3]

We also find that a higher fraction of xiagang workers in Wuhan were from enterprises which still contributed to their unemployment insurance, pension and medical expenses. In both cities, a higher proportion of the comparison group have their medical expenses paid for by the enterprises which tends to increase program effects. Enterprises with xiagang workers were required to establish and operate reemployment centers. However, in Shenyang only 27 percent of the comparison group but 16 percent of the participant group reported that their enterprises had reemployment centers. In Wuhan, over 84 percent of comparison group and 71 percent of workers had re-employment centers. The difference in rates of having an SOE based reemployment center between the participant group and the comparison group in both cities was statistically significant.

[3] Interestingly, in both cities a large fraction of workers, ranging from 35 to 52 percent, lived with their parents during their tenure at the enterprises from which they were laid-off. This fraction was significantly higher in the participant group. For those who lived in enterprise-provided housing, the proportion in the comparison group was higher.

Table 4.2: Tenure and Benefits Provided to Xiagang Workers

	Shenyang					Wuhan				
Description	Participant Sample Size	Comparison Sample Size	Participant Mean	Comparison Mean	T-Statistic on diff	Participant Sample Size	Comparison Sample Size	Participant Mean	Comparison Mean	T-Statistic on diff
Tenure at Xiagang Enter (Months)	992	1056	135 0	166.5	8 88	640	940	146.1	163 0	4 03
Time Since Xiagang (Years)	994	1061	4.17	4.53	3.22	623	912	5.34	4.21	5.80
Housing Status when employed in firm from which declared xiagang										
Own House	1002	1061	0.22	0.26	1.79	637	938	0.18	0 18	0.18
Enterprise provided House	1002	1061	0 14	0.20	3.43	637	938	0.16	0 28	5.8
Parents House	1002	1061	0.52	0.45	3 17	637	938	0.42	0 35	2.66
Other Housing	1002	1061	0.12	0 10	1.52	637	938	0.24	0.19	2.59
Other benefits										
Medical Expenses Paid by Enterprise	1002	1061	0.36	0 44	3 80	643	942	0.63	0.70	3.05
Unemployment Insurance contribution paid by enterprise Covered, Xiagang Enter Pays	1002	1061	0.17	0 16	0.53	643	942	0.30	0.38	3 08
Pension Insurance contribution	1002	1061	0.39	0 43	1.92	643	942	0 62	0.64	1 03
Enterprise provides a re-employment center	1098	1061	0.182	0.268	4 79	643	941	0.711	0.836	6.04
Living Subsidy										
Received Xiagang Stipend at any time between 1/98 - 6/00	1002	1061	0 21	0 23	1 16	643	942	0.80	0 94	8 51
Amount of Xiagang Stipend Received in total between 1/98 - 6/00	229	260	4038.0	3496.1	0.82	510	874	4039.8	5554.9	9.27

4.6 Nature of Training

In Shenyang, re-training for laid-off workers is run separately from other employment-related training programs. In 1998, there were 113 schools to train skilled workers and 199 enterprise-based training units. The Shenyang government launched an ambitious training plan in 1998 which provided free training to all laid-off workers, and had a budget of 10 million Yuan. In Wuhan, the government's role in retraining of laid-off workers was less active. In 1998, there were 32 skilled worker training schools and employment training centers within the labor system. The responsibility for re-training of laid-off workers rested mostly with the enterprises. SOEs could approach the industry bureau and labor bureau for assistance if they faced financial or technical difficulties.

Despite the more ambitious role of the government in Shenyang to train xiagang, the quality of programs varied greatly across training institutions. Training institutions differed in capacity, space, classroom setup, workshop facilities, and laboratory and mechanical equipment. A number of training institutions only provided theoretical instructions without any practical training in their vocational courses. Some of the training courses offered did not seem to be aligned with labor market needs, and there were no standards to govern curricula development and qualifications of instructors.

Our surveys asked some questions about the nature of training. Information on training regarding the institutional location, duration, type, and whether individuals contributed to training costs are shown in Table 4.3 for both Shenyang and Wuhan for the small and large samples. The nature of training differs across the two cities. As indicated, we had restricted our list to three district training schools run by the labor bureau in Shenyang. So, the training location is almost exclusively the labor bureau. In contrast, there was more random variation in the training location in Wuhan. For the small sample, three quarters was provided by the labor bureau and the rest by a variety of other providers. The training in Shenyang is almost exclusively of one month duration whereas in Wuhan 59 percent is less than one month, another 19 percent is 1-2 months and 22 percent is over two months long (for the small sample). Only 2 percent of the participants paid for part or all of the costs of training in Shenyang, whereas 20 percent of them paid something for training in Wuhan.

There is also variation in the type of courses attended. In Shenyang, for the small sample; a third of the sample took computer courses; 22 percent cooking; 16 percent beauty, massage and hair cutting; and another 15 percent took sewing and toymaking. In Wuhan about thirty percent took computer training, 23 percent took management courses, 9 percent cooking, 8 percent repair training, and another 8 percent driver's education.

TABLE 4.3: PARTICIPANT MEANS FOR TRAINING LOCATION, DURATION, TYPE AND INDIVIDUAL PAYMENT FOR TRAINING

Means are Proportion of Treatments

	Shenyang				Wuhan			
Training Category	Small Sample Size	Large Sample Size	Small Sample Mean	Large Sample Mean	Small Sample Size	Large Sample Size	Small Sample Mean	Large Sample Mean
Training Location:	1002	1099	1.000	1.000	640	829	1.000	1.000
Labor Bureau	981	1042	0.979	0.948	482	580	0.753	0.700
Other	21	57	0.021	0 052	158	249	0.247	0.300
Training Duration:	998	1094	1.000	1.000	635	824	1.000	1.000
Less than 1 Month	979	1056	0.981	0 965	374	502	0 589	0.609
More than 1 Month	19	38	0.019	0 035	261	322	0.411	0 391
1-2 Months	14	22	0.014	0 020	123	150	0.194	0.182
More than 2 Months	5	16	0 005	0 015	138	172	0.217	0 209
Training Type:	1002	1099	1.000	1.000	640	826	1 000	1 000
Computers	331	352	0.330	0.320	193	256	0.302	0 310
Repair	50	58	0.050	0.053	54	61	0 084	0.074
Cooking	221	241	0.221	0 219	60	70	0.094	0.085
Sewing and Toy Making	146	152	0 146	0.138	8	11	0.013	0 013
Beauty, Massage, Hair Cutting	164	171	0.164	0.156	18	21	0 028	0.025
Management	47	63	0.047	0.057	148	207	0 231	0.251
Other	43	62	0 043	0.056	159	200	0.248	0.242
Driving	3	9	0.003	0.008	53	73	0.083	0 088
Domestic Management	8	13	0 008	0.012	22	24	0.034	0 029
Multiple-Skill Training	1	2	0.001	0.002	5	9	0.008	0.011
Other	31	38	0.031	0.035	79	94	0.123	0.114
Training Payment:	1000	1097	1 000	1.000	638	824	1 000	1.000
Paid to Take Training	17	28	0 017	0 026	125	189	0.196	0 229
Did Not Pay	983	1069	0.983	0.974	513	635	0 804	0.771

5. Empirical Results

Our net impact analysis focused on two key outcomes: employment and earnings. We applied various estimators to evaluate the impact of training on employment and earnings of xiagang workers. A description of the methodology is presented in Section 4 of Annex 1. Regression estimates from applying ordinary least squares (OLS) adjusts for observable characteristics were robust. Estimates from propensity-score and log-odds ratio matching approaches with various restrictions were not significantly different from the OLS estimates.

We found that training has a negative impact in Shenyang but a positive influence in Wuhan on one's likelihood of being employed. Adjusted-OLS impact estimate and the probit marginal effect estimate are very close being -0.059 and -0.063 respectively in Shenyang and 0.078 and 0.085 respectively in Wuhan. The estimates suggest that participation in training reduces the probability of being employed on the survey date by about 6 percentage points in Shenyang, but increases the employment probability in Wuhan by about 8 percentage points.

5.1 Overall Impacts of Training

We present training impacts for the small, medium, and large samples as defined in Table 4.1. Impact estimates based on the smallest samples are presented in Tables 5.1 and 5.2 for Shenyang and Wuhan respectively. Our discussion first focuses on the employment impact estimates before turning to estimates of training on earnings. Impact estimates for the medium and large samples reported in Tables 5.3 through 5.6. Impact estimates computed using samples created by propensity score matching on the small samples are also presented in Table 5.1 for Shenyang and Table 5.2 for Wuhan.[4] Estimates with restrictions of different degrees of tolerances[5] in identifying an appropriate match from the comparison group for each member of the training group are also presented. (See Section 4 of Annex 1 for details of the estimators).

The last two columns of tables 5.1 and 5.2 show that the propensity score matching method uses markedly fewer comparison group observations than the regression approaches. This reflects the fact that the overlapping areas of support between the distributions of participants and comparison group observations is limited. Since matching is done with replacement, in the unrestricted propensity score matching each comparison group observation selected is used an average of 2.6 times. The Max-min–Min-max and caliper matching further restrict the samples by excluding some participants for whom there is no sufficiently close observation in the comparison group. The caliper tolerances of 0.004, 0.003, 0.002, and 0.001 were set to yield samples which were approximately 91, 88, 83, and 73 percent of the original sample sizes starting from the largest samples in Shenyang. The same absolute tolerance limits were applied to all three sample sizes which are reported in tables 5.1 to 5.6 for both cities. For the log-odds ratio caliper matching the tolerances were set to yield similar sample proportions.

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[4] The parameters of the probit propensity score models estimated on the Shenyang and Wuhan data are presented in Annex 2, Table B.2.

[5] The tables report results based on unrestricted propensity score matches, and for propensity score matched samples trimmed by the Rosenberg and Rubin (1983) Max-min–Min-max rule; for caliper matching with tolerances set at 0.004, 0.003, 0.002, and 0.001; for unrestricted samples matched on the log-odds ratio; and for log-odds ratio caliper matched samples with absolute tolerance of the caliper set at 0.064, 0.041, 0.016, and 0.006.

In Shenyang (Table 5.1), we find that the unrestricted propensity score matched impact estimate of training on the probability of employment is -0.074, which is not significantly different from the regression adjusted impact estimates. We also find no differences in estimates computed with various rules of matching restrictions.[6] The negative effect of employment may reflect differences in unobservables, such as motivation and innate ability between the training and comparison groups. Training programs may be of poor quality and employers, therefore, consider only workers with limited prospects would participate in them. Unfortunately, matching methods do not adjust for selection bias due to unobservables.[7] Even in the case where participation in training is not influenced by unobservables, if employers believe that less able and unmotivated workers participate in government sponsored programs, then training participation is a negative signal.

In Wuhan (Table 5.2), the unrestricted propensity score matched impact estimate of training on the probability of employment is 0.064, which is not significantly different from the regression adjusted impact estimates. Impact estimates under matching restrictions are not significantly different from the OLS point estimate. Estimates using the log-odds ratio matching yield similar finding where they are not significantly different from OLS, probit or various propensity score estimates.

Tables 5.3 and 5.5 indicate that in Shenyang, the expansion of sample sizes by adding to participants appropriately from the comparison group as well as adding to the comparison group from non-participants does not influence the negative training impacts found on employment nor the nil impacts on earnings. For Wuhan, Tables 5.4 and 5.6 indicate that positive training impacts on employment are consistent across the three samples.

When we examine earnings at current jobs, training does not appear to have any impact in Shenyang. In Wuhan, however, the effect of training on earnings in the current job is not robust to different estimators and samples sizes. Using the smallest sample, we find some dampening effects on earnings with some estimators whereas using the medium and large samples, we find no significant effect in almost all the estimators. Thus, training impacts on earnings are also negligible in Wuhan.

We find that impact estimates which adjust for observables are a robust estimation method. Therefore, we use the popular OLS estimation to examine how training may vary by demographic subgroups and whether training impacts differ by training location/sponsor, training duration or skill type in the following sections.

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[6] The exception is that the estimate of training impact is not significantly different from zero under the tightest tolerance.

[7] Ichimura, Heckman and Todd (1998) document that there are three reasons for selection bias in constructing comparison groups: (i) for certain values of X among participants, there may be no comparison group members and vice versa, that is the support (regions of X where the density function is not zero) of X in the participant and the comparison groups may not completely overlap, (ii) the differences in the distribution of X between participants and comparison group members within the region of common support, i.e. for those values of X common to the two groups; and (iii) selection on unobservables. Overall, putting participants and comparison group members in the same labor markets and giving them the same questionnaire, as is the case with this evaluation, eliminates a substantial amount (around 50 percent) of the selection bias.

5.2 Training Impacts by Demographic Sub-Group

There are at least two reasons to examine program impacts by demographic subgroup. One is to provide information to policy makers who may consider targeting training to certain groups like those without a specialization or older unemployed persons. Another is to identify any possible biases in the effects—a training program that benefits only one gender or certain education level groups may not be considered good policy even if it is cost effective.

Subgroup impact estimates were computed simultaneously, that is, program impact estimates for females were computed while adjusting for the fact that registered unemployed females tend to have more schooling and are less likely to work in blue collar occupations than their male counterparts.[8] For Shenyang and Wuhan respectively, Tables 5.7 and 5.8 present subgroup net impact estimates of retraining on employment and earnings by age, gender, education, marital status and housing status. The latter category, housing status, is used to elucidate a unique feature of the xiagang relationship which often exists with the state owned enterprise in China.

We find that training impacts on earnings or employment do not differ by age, marital status, gender, educational attainment, and home ownership in a consistent manner for all three samples of Wuhan. In Shenyang, there is a difference in training impacts only for earnings by marital status. Training tends to depress earnings of married people (in all samples) and of men (only in the smallest sample). Even though training appears to have a stronger negative impact on employment of men and of those with a vocational or junior high education, the difference is not large enough to be statistically significant in all three sample sizes.

5.3 Impacts of Training Features

Since training provided to xiagang seeking work is not homogenous, it is useful to investigate if variations in different observable dimensions of training yield different impacts on the outcome measures for employment and earnings. Tables 5.9 and 5.10 present net impact estimates for the Shenyang and Wuhan data, respectively, of various training features on employment and earnings. As for the above presentation of subgroup impact estimates, results are provided for all three sample definitions.[9] Estimates are presented by location of training, duration of training, skill type of training, and whether or not the participant contributed to the cost of training.

When we consider impacts of training by location, duration and type, we find that in Shenyang, those trained at the labor bureau (constituting 95 percent of the total trained) were associated with significantly lower reemployment rates, and training longer than one month duration improved reemployment prospect. There were no significant differences in impact on employment across the seven training type groups (i.e., computers, repair, cooking, sewing and toy making, beauty massage and hair cutting, management, and other). In terms of training

[8]For details on the estimation methodology see Annex 4 of O'Leary, Nesporova, and Samorodov (2001).

impacts on earnings, there is no statistically significant difference by location, duration, and skill type.

In Wuhan, the pattern of effects is somewhat different. Training has a positive impact on employment, but there are no statistically significant differences by location or duration. The computer, cosmetology and "other" type category have positive impacts on employment whereas the other courses do not have any significant impacts. In terms of training impacts on earnings, those with computer training have significantly lower earnings.

An interesting finding is that in both Shenyang and Wuhan, those who contributed personally to the cost of training had higher re-employment rates. In Shenyang, workers who contributed to the costs of training, albeit making up only 2 percent of the group, were 18 percentage points more likely to be employed. In Wuhan, those who paid, constituting 20 percent of the group, had a 10 percentage points higher probability to be employed.

6. Discussion

To explain the different outcomes in both cities, we would have to investigate changes in the local economy during the recent years. As shown in Section II, Wuhan in Hubei province had higher growth rates than Shenyang in Liaoning province, particularly during the period 1995-1998. It is likely that that in an environment where jobs are being created, training programs are more likely to enhance reemployment rates. Another issue is that the skill of participants may not match that required in the new jobs; skill training type should be coordinated with jobs in the growing sectors. Examining job search histories in the survey data (e.g., reasons for turning down job offers; the relative number of rejections to job applications), we may learn more about the skill-matching issue in both cities.

Further investigation into the nature and organization of training programs in these cities could inform us about factors that may influence effectiveness and productivity of such programs. Other information in the survey that we will explore further include trainees' assessment of the programs, perception of whether training has helped re-employment; and training intensity (i.e., some trainees were working full-time while participating in the training). In addition, we will examine whether training in conjunction with other labor market services (such as job search assistance, job counseling, etc.) may be more effective than training in isolation. In Wuhan, over three-quarters of xiagang (versus 20 percent in Shenyang) reported having a re-employment service center (where various assistance is supposed to be provided) at their enterprises.

Many have observed that training programs are generally disorganized and low in quality. Often in China as many as 200 to 300 workers are crammed into a small classroom, and only simple skills are taught. It is also unclear whether the course curriculum is developed to cater to market needs. If laid-off workers are required to pay for part of their training costs, then the courses may be more demand-driven since workers will only be willing to pay for programs that could potentially enhance their employability and productivity. The evidence suggests that workers who paid for part or all of their training were significantly more likely to be employed. In Shenyang, workers who contribute to the costs of training, albeit making up only 2 percent of

the group, are 18 percentage points more likely to be employed. In Wuhan, those who pay, constituting 20 percent of the group, were 10 percentage points more likely to be employed.

Despite the ambition of the Shenyang government to retrain all xiagang, most workers in Shenyang received neither their layoff stipend nor had access to re-employment centers (where job search and other assistance was provided). In contrast, the Wuhan municipal government was less active in retraining efforts, but almost every worker received his layoff stipend and had access to reemployment centers. It appears that the Wuhan government devoted more effort to ensure that stipulated assistance in the Reemployment Program was properly provided.

Given that the participant group in Shenyang is significantly more educated, with a higher proportion of them in the professional and clerical occupations, and a shorter unemployment spell at survey date (whereas in Wuhan, participants' unemployment duration is longer, with no differences in educational attainment or proportions in the professional and clerical occupations), it may likely be that poorly run training programs with a bad reputation among the employers actually give Shenyang participants a bad label. Employers may perceive that only workers with low motivation and limited prospects would attend training, and analyzers therefore associate participation with a negative signal. Thus, government effort to assist the xiagang workers needs to be evaluated further. While easing the transition for xiagang back to regular employment is a priority, the best route to doing so may be indirect (through providing an environment where jobs are created and private training institutes flourish), rather than direct (providing training at labor bureaus).

Table 5.1
Training Impact Estimates on Employment and Earnings for the Smallest Samples
Results from a Series of Estimators for Shenyang
(Standard errors in parentheses)

Estimator	Impact on Employment	Impact on Log Earnings	Sample Sizes from Employment Regressions/Matching	
			Participants	Comparison
Shenyang				
Unadjusted differences in means	-0.113** (0.022)	-0.125** (0.037)	1002	1061
OLS regression adjusted	-0.059** (0.026)	0.023 (0.045)	964	1047
Probit regression adjusted	-0.157** (0.069)			
Marginal effect	-0.063	NA	964	1047
Propensity score matching Unrestricted	-0.074** (0.023)	-0.029 (0.033)	964	375
Propensity score matching Max-min, Min-max trimming	-0.066** (0.023)	-0.026 (0.033)	951	375
Propensity score matching Caliper absolute tolerance 0.004	-0.081** (0.024)	-0.037 (0.039)	863	375
Propensity score matching Caliper absolute tolerance 0.003	-0.078** (0.025)	-0.026 (0.042)	823	375
Propensity score matching Caliper absolute tolerance 0.002	-0.072** (0.025)	-0.057 (0.045)	766	375
Propensity score matching Caliper absolute tolerance 0.001	-0.034 (0.029)	-0.062 (0.054)	613	353
Log-odds ratio matching Unrestricted	-0.046** (0.023)	-0.031 (0.031)	964	375
Log-odds ratio matching Caliper absolute tolerance 0.064	-0.068** (0.024)	-0.021 (0.038)	850	375
Log-odds ratio matching Caliper absolute tolerance 0.041	-0.069** (0.025)	-0.029 (0.040)	825	375
Log-odds ratio matching Caliper absolute tolerance 0.016	-0.060** (0.026)	-0.052 (0.044)	747	372
Log-odds ratio matching Caliper absolute tolerance 0.006	-0.035 (0.028)	-0.086* (0.053)	637	359

Table 5.2
Training Impact Estimates on Employment and Earnings for the Smallest Samples
Results from a Series of Estimators for Wuhan
(Standard errors in parentheses)

Estimator	Impact on Employment	Impact on Level of Earnings	Sample Sizes from Employment Regressions/Matching	
			Participants	Comparison
Wuhan				
Unadjusted differences in means	0.039 (0.025)	-0.133** (0.060)	641	939
OLS regression adjusted	0.078** (0.031)	-0.125* (0.074)	578	825
Probit regression adjusted	0.220** (0.085)			
Marginal effect	0.085	NA	578	825
Propensity score matching Unrestricted	0.064** (0.029)	-0.165** (0.064)	578	286
Propensity score matching Max-min, Min-max trimming	0.054* (0.029)	-0.160** (0.065)	571	285
Propensity score matching Caliper absolute tolerance 0.004	0.079** (0.030)	-0.118* (0.071)	530	286
Propensity score matching Caliper absolute tolerance 0.003	0.071** (0.031)	-0.082 (0.072)	496	286
Propensity score matching Caliper absolute tolerance 0.002	0.076** (0.032)	-0.099 (0.083)	471	284
Propensity score matching Caliper absolute tolerance 0.001	0.086** (0.035)	-0.114 (0.102)	385	265
Log-odds ratio matching Unrestricted	0.061** (0.029)	-0.165** (0.064)	578	286
Log-odds ratio matching Caliper absolute tolerance 0.064	0.077** (0.030)	-0.131* (0.073)	544	286
Log-odds ratio matching Caliper absolute tolerance 0.041	0.078** (0.030)	-0.124* (0.074)	538	286
Log-odds ratio matching Caliper absolute tolerance 0.016	0.083** (0.031)	-0.115 (0.074)	494	273
Log-odds ratio matching Caliper absolute tolerance 0.006	0.087** (0.034)	-0.154* (0.092)	424	266

Table 5.3
Training Impact Estimates on Employment and Earnings for the Medium Sample
Results from a Series of Estimators for Shenyang
(Standard errors in parentheses)

Estimator	Impact on Employment	Impact on Log Earnings	Sample Sizes from Employment Regressions/Matches	
			Participants	Comparison
Shenyang				
Unadjusted differences in means	-0.103** (0.021)	-0.100** (0.035)	1099	1061
OLS regression adjusted	-0.060** (0.025)	0.040 (0.043)	1060	1047
Probit regression adjusted	-0.157** (0.066)			
Marginal effect	-0.063	NA	1060	1047
Propensity score matching Unrestricted	-0.064** (0.022)	0.049 (0.038)	1060	393
Propensity score matching Max-min, Min-max trimming	-0.058** (0.022)	0.051 (0.038)	1049	393
Propensity score matching Caliper absolute tolerance 0.004	-0.081** (0.023)	0.060 (0.044)	952	393
Propensity score matching Caliper absolute tolerance 0.003	-0.082** (0.023)	0.047 (0.044)	920	393
Propensity score matching Caliper absolute tolerance 0.002	-0.078** (0.024)	0.032 (0.045)	844	393
Propensity score matching Caliper absolute tolerance 0.001	-0.029 (0.027)	0.066 (0.051)	683	383
Log-odds ratio matching Unrestricted	-0.053** (0.022)	0.052 (0.038)	1060	393
Log-odds ratio matching Caliper absolute tolerance 0.064	-0.068** (0.023)	0.069 (0.043)	933	392
Log-odds ratio matching Caliper absolute tolerance 0.041	-0.072** (0.023)	0.065 (0.045)	904	392
Log-odds ratio matching Caliper absolute tolerance 0.016	-0.077** (0.024)	0.053 (0.046)	844	392
Log-odds ratio matching Caliper absolute tolerance 0.006	-0.036 (0.027)	0.038 (0.055)		380

Table 5.4
Training Impact Estimates on Employment and Earnings for the Medium Samples
Results from a Series of Estimators for Wuhan
(Standard errors in parentheses)

Estimator	Impact on Employment	Impact on Level of Earnings	Sample Sizes from Employment Regressions/Matching	
			Participants	Comparison
Wuhan				
Unadjusted differences in means	0.043* (0.023)	-0.104* (0.056)	939	829
OLS regression adjusted	0.079** (0.028)	-0.115* (0.067)	744	825
Probit regression adjusted Marginal effect	0.222 (0.078) 0.086	NA	744	825
Propensity score matching Unrestricted	0.105** (0.025)	-0.105* (0.053)	744	349
Propensity score matching Max-min, Min-max trimming	0.097** (0.025)	-0.101* (0.055)	734	348
Propensity score matching Caliper absolute tolerance 0.004	0.106** (0.026)	-0.049 (0.058)	689	349
Propensity score matching Caliper absolute tolerance 0.003	0.102** (0.026)	-0.042 (0.060)	675	348
Propensity score matching Caliper absolute tolerance 0.002	0.101** (0.027)	-0.055 (0.066)	645	346
Propensity score matching Caliper absolute tolerance 0.001	0.099 (0.030)	-0.074 (0.074)	538	330
Log-odds ratio matching Unrestricted	0.106** (0.025)	-0.102* (0.053)	744	349
Log-odds ratio matching Caliper absolute tolerance 0.064	0.106** (0.026)	-0.064 (0.059)	708	348
Log-odds ratio matching Caliper absolute tolerance 0.041	0.106** (0.026)	-0.064 (0.059)	691	346
Log-odds ratio matching Caliper absolute tolerance 0.016	0.099** (0.027)	-0.059 (0.058)	658	344
Log-odds ratio matching Caliper absolute tolerance 0.006	0.102** (0.029)	-0.089 (0.075)	577	335

Table 5.5
Training Impact Estimates on Employment and Earnings for the Largest Samples
Results from a Series of Estimators for Shenyang
(Standard errors in parentheses)

Estimator	Impact on Employment	Impact on Log Earnings	Sample Sizes from Employment Regressions/Matches	
			Participants	Comparison
Shenyang				
Unadjusted differences in means	-0.101** (0.021)	-0.099** (0.035)	1099	1066
OLS regression adjusted	-0.057** (0.025)	0.040 (0.043)	1060	1050
Probit regression adjusted	-0.152** (0.066)			
Marginal effect	-0.061	NA	1060	1050
Propensity score matching Unrestricted	-0.059** (0.022)	0.049 (0.038)	1060	395
Propensity score matching Max-min, Min-max trimming	-0.053** (0.022)	0.051 (0.039)	1049	395
Propensity score matching Caliper absolute tolerance 0.004	-0.077** (0.023)	0.062 (0.046)	950	395
Propensity score matching Caliper absolute tolerance 0.003	-0.061** (0.023)	0.061 (0.049)	916	395
Propensity score matching Caliper absolute tolerance 0.002	-0.051** (0.024)	0.057 (0.053)	830	394
Propensity score matching Caliper absolute tolerance 0.001	-0.045* (0.027)	0.053 (0.069)	687	378
Log-odds ratio matching Unrestricted	-0.051** (0.022)	0.049 (0.038)	1060	395
Log-odds ratio matching Caliper absolute tolerance 0.064	-0.070** (0.023)	0.068 (0.044)	958	395
Log-odds ratio matching Caliper absolute tolerance 0.041	-0.057** (0.023)	0.066 (0.045)	906	394
Log-odds ratio matching Caliper absolute tolerance 0.016	-0.059** (0.024)	0.060 (0.051)	833	393
Log-odds ratio matching Caliper absolute tolerance 0.006	-0.059** (0.027)	0.055 (0.066)	691	375

Table 5.6
Training Impact Estimates on Employment and Earnings for the Largest Samples
Results from a Series of Estimators for Wuhan
(Standard errors in parentheses)

Estimator	Impact on Employment	Impact on Level of Earnings	Sample Sizes from Employment Regressions/Matching	
			Participants	Comparison
Wuhan				
Unadjusted differences in means	0.043* (0.023)	-0.100* (0.052)	829	1121
OLS regression adjusted	0.078** (0.027)	-0.099* (0.061)	744	985
Probit regression adjusted Marginal effect	0.218** (0.074) 0.085	NA	744	985
Propensity score matching Unrestricted	0.093** (0.025)	-0.019 (0.057)	744	406
Propensity score matching Max-min, Min-max trimming	0.084** (0.025)	-0.013 (0.058)	736	406
Propensity score matching Caliper absolute tolerance 0.004	0.081** (0.026)	0.029 (0.060)	712	405
Propensity score matching Caliper absolute tolerance 0.003	0.076** (0.026)	0.026 (0.064)	697	403
Propensity score matching Caliper absolute tolerance 0.002	0.072** (0.027)	0.036 (0.068)	678	399
Propensity score matching Caliper absolute tolerance 0.001	0.074** (0.028)	0.047 (0.076)	608	390
Log-odds ratio matching Unrestricted	0.093** (0.025)	-0.019 (0.057)	744	406
Log-odds ratio matching Caliper absolute tolerance 0.064	0.081** (0.026)	-0.007 (0.060)	730	405
Log-odds ratio matching Caliper absolute tolerance 0.041	0.080** (0.026)	-0.009 (0.061)	724	404
Log-odds ratio matching Caliper absolute tolerance 0.016	0.075** (0.026)	0.024 (0.063)	798	402
Log-odds ratio matching Caliper absolute tolerance 0.006	0.069** (0.027)	0.063 (0.073)	639	395

Table 5.7. Training Effect Estimates by Age, Gender, Education, Marital and Housing Status in Shenyang
(Standard errors in parentheses)

	Currently Working			Log of Current Earnings		
Training Category	Small Sample	Medium Sample	Large Sample	Small Sample	Medium Sample	Large Sample
Age: Less than 25 (r)	0.094	0.080	0.130	-0.163	-0.181	-0.181
	(0.205)	(0.206)	(0.196)	(0.333)	(0.325)	(0.325)
Age 25 to 40	-0.119	-0.106	-0.125	0.005	0.063	0.063
	(0.086)	(0.085)	(0.082)	(0.139)	(0.136)	(0.137)
Age 41 and older	-0.177	-0.157	-0.187	-0.021	0.048	0.048
	(0.129)	(0.129)	(0.123)	(0.207)	(0.215)	(0.214)
Gender: Male (r)	-0.086**	-0.085**	-0.084**	-0.151**	-0.088	-0.088
	(0.041)	(0.038)	(0.038)	(0.065)	(0.060)	(0.060)
Female	-0.045	-0.037	-0.036	0.028##	0.039	0.039#
	(0.029)	(0.029)	(0.029)	(0.053)	(0.052)	(0.052)
Education: Primary	-0.093	-0.048	-0.047	-0.151	-0.086	-0.086
	(0.199)	(0.196)	(0.192)	(0.338)	(0.325)	(0.326)
Junior High	-0.107**	-0.100**	-0.099**	-0.026	0.017	0.017
	(0.043)	(0.041)	(0.041)	(0.072)	(0.070)	(0.069)
Senior High	-0.110	-0.086	-0.085	0.015	0.053	0.053
	(0.071)	(0.070)	(0.070)	(0.107)	(0.115)	(0.115)
Vocational	-0.224**#	-0.186**	-0.184**	-0.044	0.039	0.039
	(0.090)	(0.089)	(0.088)	(0.145)	(0.146)	(0.146)
Tertiary (r)	0.030	0.025	0.026	-0.112	-0.093	-0.093
	(0.071)	(0.071)	(0.070)	(0.112)	(0.111)	(0.111)
Marital Status: Married	-0.070**	-0.067**	-0.066**	-0.108**##	-0.071##	-0.071##
	(0.026)	(0.026)	(0.025)	(0.046)	(0.044)	(0.044)
Not Married (r)	-0.010	0.010	0.011	0.247**	0.266**	0.266**
	(0.057)	(0.055)	(0.056)	(0.107)	(0.101)	(0.101)
Housing: Own House (r)	-0.060	-0.066	-0.064	0.003	0.023	0.023
	(0.043)	(0.042)	(0.042)	(0.071)	(0.116)	(0.069)
Enterprise House	-0.157**	-0.138**	-0.137**	-0.066	-0.052	-0.052
	(0.070)	(0.068)	(0.068)	(0.125)	(0.116)	(0.116)
Parents House	-0.052	-0.038	-0.037	-0.105*	-0.050	-0.051
	(0.037)	(0.036)	(0.036)	(0.063)	(0.060)	(0.060)
Other House	-0.012	0.006	0.001	-0.220	-0.155	-0.153
	(0.069)	(0.055)	(0.071)	(0.136)	(0.132)	(0.130)

* Significantly different from zero at the 10 percent confidence level in a two-tailed test
** Significantly different from zero at the 5 percent confidence level in a two-tailed test
# Significantly different from the reference sub-group (r) at the 10 percent confidence level in an F-test
Significantly different from the reference sub-group (r) at the 5 percent confidence level in an F-test.

Table 5.8. Training Effect Estimates by Age, Gender, Education, Marital and Housing Status in Wuhan
(Standard errors in parentheses)

	Currently Working			Log of Current Earnings		
Training Category	Small Sample	Medium Sample	Large Sample	Small Sample	Medium Sample	Large Sample
Age: Less than 25 (r)	-0.079	-0.095	-0.056	-0.131	-0.225	-0.156
	(0.220)	(0.207)	(0.198)	(0.437)	(0.417)	(0.390)
Age 25 to 40	0.130	0.141*	0.123*	-0.090	-0.033	-0.068
	(0.082)	(0.075)	(0.072)	(0.173)	(0.148)	(0.147)
Age 41 and older	0.210	0.215	0.182	-0.147	-0.051	-0.096
	(0.154)	(0.148)	(0.139)	(0.320)	(0.292)	(0.277)
Gender: Male (r)	0.069*	0.086**	0.081**	-0.171**	-0.143*	-0.140*
	(0.040)	(0.036)	(0.035)	(0.086)	(0.076)	(0.072)
Female	0.090**	0.079**	0.076**	-0.020	-0.017	-0.036
	(0.035)	(0.034)	(0.032)	(0.102)	(0.098)	(0.086)
Education: Primary	0.095	0.096	0.075	-0.585	-0.494	-0.632
	(0.265)	(0.258)	(0.249)	(0.690)	(0.666)	(0.620)
Junior High	0.101	0.102	0.108*	-0.054	0.001	0.003
	(0.069)	(0.066)	(0.064)	(0.163)	(0.154)	(0.015)
Senior High	0.067	0.072	0.081	-0.057	-0.001	0.025
	(0.062)	(0.059)	(0.057)	(0.146)	(0.132)	(0.124)
Vocational	0.097	0.107	0.092	-0.193	-0.079	-0.034
	(0.106)	(0.096)	(0.094)	(0.249)	(0.218)	(0.198)
Tertiary (r)	0.075	0.076	0.059	-0.162	-0.202	-0.254
	(0.090)	(0.085)	(0.084)	(0.200)	(0.184)	(0.173)
Marital Status: Married	0.065**	0.074**	0.067**	-0.101	-0.095	-0.102*
	(0.028)	(0.026)	(0.025)	(0.073)	(0.065)	(0.060)
Not Married (r)	0.175**	0.137**	0.153**	-0.165	-0.077	-0.075
	(0.073)	(0.067)	(0.064)	(0.173)	(0.156)	(0.148)
Housing: Own House (r)	0.152**	0.155**	0.116**	-0.198	-0.097	-0.194
	(0.059)	(0.055)	(0.052)	(0.165)	(0.152)	(0.134)
Enterprise House	0.059	0.075	0.095	-0.029	-0.079	-0.007
	(0.074)	(0.065)	(0.063)	(0.206)	(0.158)	(0.147)
Parents House	-0.001	-0.012#	0.022	-0.060	-0.087	-0.030
	(0.051)	(0.049)	(0.046)	(0.128)	(0.120	(0.107)
Other House	0.019	0.039	0.058	-0.006	-0.101	-0.006
	(0.068)	(0.064)	(0.061)	(0.187)	(0.170)	(0.155)

* Significantly different from zero at the 10 percent confidence level in a two-tailed test
** Significantly different from zero at the 5 percent confidence level in a two-tailed test
# Significantly different from the reference sub-group (r) at the 10 percent confidence level in an F-test
Significantly different from the reference sub-group (r) at the 5 percent confidence level in an F-test.

Table 5.9
Effects Estimates for Training Location, Duration, Type and Individual Payment for Training in Shenyang
(Standard errors in parentheses)

	Currently Working			Log of Current Earnings		
Training Category	Small Sample	Medium Sample	Large Sample	Small Sample	Medium Sample	Large Sample
Location: Labor Bureau	-0.059**	-0.063**	-0.060**##	0.027	0.040	0.040
	(0.026)	(0.025)	(0.025)	(0.045)	(0.044)	(0.044)
Other (r)	0.031	0.071	0.073	-0.239	0.110	0.110
	(0.109)	(0.068)	(0.068)	(0.182)	(0.105)	(0.105)
Duration: 1 Month or Less	-0.061**##	-0.066**##	-0.064**##	0.021	0.041	0.041
	(0.026)	(0.025)	(0.025)	(0.045)	(0.043)	(0.043)
More than 1 Month (r)	0.307**	0.262**	0.264**	-0.018	0.123	0.123
	(0.115)	(0.082)	(0.082)	(0.159)	(0.113)	(0.113)
Type: Computers	-0.061*	-0.073**	-0.071**	0.109*##	0.116*#	0.116*#
	(0.036)	(0.035)	(0.035)	(0.065)	(0.062)	(0.062)
Repair	-0.069	-0.046	-0.045	0.135##	0.117	0.117
	(0.073)	(0.068)	(0.068)	(0.120)	(0.108)	(0.108)
Cooking	-0.067*	-0.063*	-0.061	-0.074##	-0.042	-0.042
	(0.039)	(0.038)	(0.037)	(0.068)	(0.065)	(0.065)
Sewing and Toy Making	-0.059	-0.056	-0.054	0.046##	0.045	0.045
	(0.046)	(0.045)	(0.045)	(0.086)	(0.083)	(0.083)
Beauty, Massage, Hair Cutting	-0.029	-0.029	-0.027	0.096##	0.105	0.105
	(0.045)	(0.044)	(0.044)	(0.080)	(0.077)	(0.077)
Management	-0.021	-0.031	-0.029	0.063##	0.110	0.110
	(0.078)	(0.058)	(0.067)	(0.136)	(0.114)	(0.114)
Other (r)	-0.070	-0.015	-0.012	-0.421**	-0.102	-0.102
	(0.077)	(0.065)	(0.065)	(0.138)	(0.109)	(0.114)
Payment: Personal payment	0.074	0.128##	0.131##	-0.137	0.172	0.172
	(0.120)	(0.094)	(0.095)	(0.190)	(0.138)	(0.138)
No personal payment (r)	-0.059**	-0.059**	-0.057**	0.024	0.041	0.041
	(0.026)	(0.025)	(0.025)	(0.045)	(0.043)	(0.043)

* Significantly different from zero at the 10 percent confidence level in a two-tailed test.
** Significantly different from zero at the 5 percent confidence level in a two-tailed test.
# Significantly different from the reference group (r) at the 10 percent confidence level in an F-test.
Significantly different from the reference group (r) group at the 5 percent confidence level in an F-test.

Table 5.10
Effects Estimates for Training Location, Duration, Type and Individual Payment for Training in Wuhan
(Standard errors in parentheses)

	Currently Working			Log of Current Earnings		
Training Category	Small Sample	Medium Sample	Large Sample	Small Sample	Medium Sample	Large Sample
Location: Labor Bureau	0.112**	0.110**	0.111**	-0.142*	-0.103	-0.088
	(0.031)	(0.029)	(0.027)	(0.073)	(0.066)	(0.062)
Other (r)	0.074	0.095**	0.094**	-0.097	-0.058	-0.041
	(0.046)	(0.038)	(0.037)	(0.109)	(0.086)	(0.081)
Duration: 1 Month or Less	0.080**	0.101**	0.100**	-0.211**	-0.150**	-0.134**
	(0.034)	(0.030)	(0.029)	(0.082)	(0.070)	(0.065)
More than 1 Month (r)	0.127**	0.108**	0.107**	-0.061	-0.023	-0.008
	(0.037)	(0.034)	(0.033)	(0.086)	(0.077)	(0.073)
Type: Computers	0.098**	0.104**#	0.105**#	-0.262**#	-0.208**##	-0.195**##
	(0.042)	(0.037)	(0.036)	(0.102)	(0.087)	(0.083)
Repair	0.027##	0.031##	0.033##	-0.215	-0.269#	-0.258*##
	(0.070)	(0.066)	(0.066)	(0.154)	(0.141)	(0.137)
Cooking	-0.059##	-0.052##	-0.053##	-0.231	-0.209	-0.204
	(0.069)	(0.064)	(0.063)	(0.196)	(0.179)	(0.173)
Sewing and Toy Making	0.196	0.245	0.244	-0.110	0.179	0.191
	(0.183)	(0.152)	(0.152)	(0.435)	(0.324)	(0.315)
Beauty, Massage, Hair Cutting	0.262**	0.253**	0.249**	0.017	0.131	0.143
	(0.122)	(0.115)	(0.114)	(0.251)	(0.232)	(0.225)
Management	0.088*#	0.078*##	0.077*##	-0.063	-0.026	-0.008
	(0.048)	(0.042)	(0.040)	(0.116)	(0.098)	(0.093)
Other (r)	0.186**	0.195**	0.195**	-0.032	0.021	0.039
	(0.045)	(0.040)	(0.040)	(0.101)	(0.086)	(0.082)
Payment: Personal payment	0.194**##	0.183**##	0.187**##	-0.117	-0.027	-0.007
	(0.051)	(0.042)	(0.041)	(0.107)	(0.087)	(0.083)
No personal payment (r)	0.077**	0.081**	0.081**	-0.144*	-0.123*	-0.107*
	(0.031)	(0.028)	(0.027)	(0.075)	(0.067)	(0.062)

* Significantly different from zero at the 10 percent confidence level in a two-tailed test.
** Significantly different from zero at the 5 percent confidence level in a two-tailed test.
# Significantly different from the reference group (r) at the 10 percent confidence level in an F-test.
Significantly different from the reference group (r) group at the 5 percent confidence level in an F-test.

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