

***The Role of Education in Determining Labor Market Outcomes
in Urban China's Transitional Labor Markets***

By: Margaret Maurer-Fazio

William Davidson Working Paper Number 459
April 2002

**The Role of Education in Determining Labor Market Outcomes in
Urban China's Transitional Labor Markets.**

Margaret Maurer-Fazio

Department of Economics
276 Pettengill Hall
4 Andrews Road
Bates College
Lewiston ME 04240, USA

phone: 207-786-6087
fax: 207-786-8338
email: mmaurer@bates.edu

Revised
April 10, 2002

The Role of Education in Determining Labor Market Outcomes in Urban China's Transitional Labor Markets.

Abstract

Chinese urban workers are no longer shielded from market forces. They are bearing the brunt of the adjustment costs as enterprises shed redundant workers. This paper focuses on the role of education in determining labor market outcomes in China's rapidly changing urban labor environment. The empirical work, based on enterprise and worker survey data gathered in the fall of 1999 and spring of 2000, demonstrates that education is a key determinant of labor market outcomes. Educational attainment is an important and significant factor in the lay-off decision—the more education a worker has the better his/ her protection from lay off. Similarly, the more education a worker has the better his/her chances of finding new employment once laid off. The human capital accumulation of re-employed workers is rewarded more, as measured in terms of incremental earnings for each additional year of schooling, than that of continuously employed workers.

Journal of Economic Literature Classification Codes: J23, J31, J63, I20, O15, O53, P23

Keywords: China, human capital, Lay-offs, education, labor

Introduction

This paper focuses on the role of education in determining labor market outcomes in China's rapidly changing urban labor environment. In particular, the role of education in both preventing lay-offs and aiding in the re-employment of urban residents is examined. A weighted bivariate probit model is used to examine the factors (including both incremental schooling and job training) that affect the probability of lay-off. The contributions of these same factors to the probability of re-employment once laid-off are then assessed in a re-employment probit model. Finally, the role of education in the earnings determination of re-employed workers is compared to that of workers who have never been laid off.

The empirical work will demonstrate that education is a key determinant of labor market outcomes. Educational attainment is an important and significant factor in the lay-off decision—the more education a worker has the better his/ her protection from lay off. Similarly, the more education a worker has the better his/her chances of finding new employment once laid off. The human capital accumulation of re-employed workers is rewarded more, as measured in terms of incremental earnings for each additional year of schooling, than that of continuously employed workers.

Background

China's pre-reform labor system was the antithesis of free market. The state claimed ownership of labor services and bureaucratically assigned workers to enterprises for life. Workers' preferences concerning occupation or location mattered little. On the enterprise side, managers for the most part had to accept any and all workers allocated to

them. Pay rates were nearly equal regardless of worker effort, productivity, or performance.

Concerns about open unemployment and social instability caused the Chinese leadership to embark on a slow, evolutionary transition to a market economy. In the mid-1990s concerns about state-sector inefficiency began to override concerns about dismissals and layoffs. The policy of putting workers on *xiagang*, a form of layoff in which workers were placed on inactive status and sent home with small stipends was first experimented with and then applied nation-wide in 1997. The implementation of this policy coincided with the unexpected financial crisis and slowdown of growth in Asian economies.

The effects were profound. By the end of 1997 while the official unemployment (*shiye*) rate increased to 3.1% of the urban labor force, that is, 5.8 million people (China Labour Statistical Yearbook, 1998) an additional 11.5 to 15 million workers were suspended from their jobs.¹ Official statistics suggest that by the end of 1999 a total of 25.2 million workers had been laid-off (put on *xiagang*) and that 9.4 million workers still remained in the ranks of the laid-off (China Labour Statistical Yearbook, 1999, 2000). The plight of these displaced urban workers was compounded by large numbers of rural migrants seeking work. The loosening of migration restrictions in the mid-1980s allowed rural residents to look for work in urban areas and rural-to-urban migration subsequently snowballed. In 1996 approximately 45 million workers sought employment in cities (Rural Development Institute, 1998). The security once enjoyed by urban workers rapidly

¹ Li [1997:9] reports State Statistical Bureau estimates of 15 million employees made redundant, and Li [1998: 9] quotes the former Minister of Labor, Li Boyong, as reporting a figure of 11.51 million laid-off in 1997, of which 7.87 million were from state-owned enterprises.

eroded. If one describes the early reform policies as causing rust on the iron rice bowl then the 1997 *xiagang* policies should be described as totally smashing it.

Chinese urban workers are no longer shielded from market forces. They bear the brunt of the adjustment costs as enterprises shed redundant workers in their attempts to become more efficient and profitable. Laid-off workers experience substantial periods of unemployment with minimal stipends (Appleton et al., 2001). Income inequality is widening. In the early reform period, increases in income inequality meant that those at the low end of the income distribution lost out relative to those at the high end of the distribution despite experiencing rising incomes. In the current period of massive layoffs those at the low end of the distribution are experiencing substantial reductions income. Their losses are absolute (Meng, 2001).

Enterprise restructuring is forcing workers to bear much of the cost of a very painful adjustment process. In one sense, this paper can be viewed as examining how these costs are distributed amongst workers who differ in terms of their educational attainments and acquisition of job training. Some of these workers are laid off while others keep their jobs. Some of the laid-off workers find new employment quickly while others do not. Some find their human capital well rewarded in terms of earnings while others do not. In another sense, this paper can be viewed as exploring the role of education and job training in determining the labor market outcomes of China's urban residents in 1999-2000, a period in which workers faced both a great deal of uncertainty and a rapidly changing work environment.

The Data

The data used here were gathered in the fall of 1999 and spring of 2000 as part of the Urban Labor Market Integration Project.² The data set is rather unique in that it is enterprise based and ties together firm information with that of workers of three different categories: employed urban residents, laid-off urban residents, and employed migrants. Surveys were conducted at 118 enterprises, roughly 20 in each of Beijing, Nanjing, Wuhan, Xian, Tianjin, and Changchun.

Industry type (*hangye*) was the primary selection criteria for inclusion of an enterprise in the survey process. In each city several textile, mechanical processing, and construction firms were selected. The remaining enterprises were chosen according to the industrial mix of each city. Secondary selection criteria dictated that, within an industry, enterprises be selected to provide firms differing in scale, measures of economic prosperity, and ownership. Firms known to have laid-off workers or to have both laid-off workers and hired migrants were deliberately over sampled. At the time of the survey, 83 of the samples' 118 enterprises had a number of laid off workers on their rolls.³

Approximately 800 individuals in each of the six cities mentioned above, each associated with one of the selected enterprises, were surveyed—4873 individuals in total. Once an enterprise was chosen for inclusion in the sample then roughly 15 workers of

²The Urban Labor Market Integration Project was funded by the Ford Foundation, Beijing Office and was carried out by principle investigators: Fang Cai (Population Institute, Chinese Academy of Social Sciences), Margaret Maurer-Fazio (Department of Economics, Bates College), Xin Meng (Research School of Pacific and Asian Studies, Australia National University), and Hansheng Wang (Department of Sociology, Beijing University).

³ Approximately half the firms had both migrant and laid-off workers. About one third of the firms had laid-off workers but no migrant employees. A smaller number of the enterprises (approximately 15 percent) had hired migrants and had never laid-off members of their urban-resident work force. The remainder of the firms hired only urban residents and had no laid-off workers on their rolls.

each type (employed urban resident, laid-off urban resident, and migrant) were selected. The employed urban residents were randomly chosen from those present at the job site at the time of the survey. The laid-off workers were called back to the enterprise to participate in the survey. This callback method introduces a potential source of bias into the sample—laid-off workers subsequently employed in other locations are most unlikely to have responded to the enterprise callback. Migrant workers were surveyed either at the job site or in their employer-provided dormitories. In all cases, survey overseers were present in the room while respondents completed the surveys. They were thus available to observe the process and answer questions. The worker surveys included questions regarding: background information, work history, income, expenditure, and attitudes.

It is important to note that the workers designated here as “laid-off” (i.e., labeled as *xiagang gong ren*) are so designated because the enterprises that anchor the surveys identified them as such. Almost one third of these “laid-off” workers reported finding jobs subsequent to their lay-offs though only one quarter remained employed at the time of the survey. (Insert Table 1 here)

Personal Background and Educational Attainment

Selected sample means and proportions from the worker surveys are reported in Table 1. Men make up 52 percent of the sample of employed urban residents and only 44 percent of laid-off urban workers. There is little difference in age between the laid-off workers and the employed--the laid off-workers, at a mean age of 39, are about a year younger than their employed urban counterparts. Employed urban residents have a little more schooling than laid-off workers with means of 11.7 and 10.6 years of schooling, respectively. Over 8 percent of the currently/continuously employed have university

educations while only 2.8 percent of the laid-off workers have attained this level of education. Although the majority of workers received some job training, the proportion of employed urban residents receiving such training was almost 17 percentage points higher than the proportion of laid-off workers.

Monthly Income and Hourly Wages

The monthly income reported in Table 1 includes wages, subsidies, and bonuses but does not include the value of employer-provided benefits such as medical insurance, pension accruals, and housing. The pecuniary income of the urban workers (553 yuan/month) considerably exceeds that from the last job before lay-off for the laid-off workers (417 yuan/ month). However, it should be noted that this mean income is a simple average of these workers last reported income regardless of the year in which it was earned. Over one third of the laid-off workers (37.7 percent) managed to find some type of work after being laid off and 27.4 percent reported still having a job at the time of the survey. The stated average monthly income of these re-employed workers at 571 yuan/month exceeds that of their urban counterparts who have not yet experienced being laid-off. However, they work more hours per day (8.46) and more days per week (5.68) than urban workers who have never experienced a layoff. Consequently, their hourly wage at 3.10 yuan is lower than that received by their urban counterparts who have never been laid-off (3.37 yuan/hour).

Enterprise Ownership, Job Classification and Job Position

In this sample, approximately 80 percent of the urban residents work or used to work for state-owned enterprises. This proportion exceeds the national proportion of urban workers employed in state-owned enterprises by 9% (China Labour Statistical

Yearbook, 2000, p.14) and is an artifact of the sampling procedure that was aimed in part towards surveying large numbers of laid-off urban workers.

There is some variation in the method by which workers are paid with a higher proportion of the laid-off workers than the continuously employed reporting being on a fixed wage contract. At their last job before being laid off, 86 percent of laid-off workers received fixed wages, 8 percent were paid by piece rate and 5 percent were compensated on an hourly basis while 77 percent of the continuously employed urban workers received fixed wages, 9 percent were on piece rate and approximately 10 percent were paid on an hourly basis. Medical insurance was provided by employers to 49 percent of the never laid-off urban workers while 54 percent of the laid-off workers used to receive this benefit.

Far fewer of the laid-off workers than the continuously employed report their latest job to be one from the higher rungs of the occupational scale—cadres, office/clerical workers, and engineers and technicians. The opposite is true for jobs at the lower rungs—higher proportions of the laid-off workers than those never laid off used to be production line workers, service workers, and sales workers.

Structure of the Empirical Work

Factors Affecting the Probability of Lay-Off

To explore the effects of human capital accumulation on the probability of an urban worker being laid-off I estimate a “within enterprise” probit model using a combined sample of all the workers with urban household registration (whether employed or laid-off) from enterprises reporting at least some lay-offs. The dependent variable is binary and set equal to one for all workers identified by the enterprise as ever

having been laid-off. Since all the enterprises in our sample were in existence and involved in production at the time they were surveyed this means each laid-off worker was chosen for lay-off while others were not. (In no cases in our sample were all the workers of a firm laid-off.)

A note of caution is in order here. The sample employed here is not representative of the population of all workers in urban China. In each city enterprises were chosen in such a way to yield reasonably large and nearly equal numbers of employed urban residents, laid-off urban residents, and migrant workers. Given this sample design, it is necessary to weight the observations to reflect the probability that a given worker of a particular employment status (employed vs. laid-off) within a particular enterprise was included in our sample. Even with this weighting scheme, the lay-off probits need to be interpreted with care. For example, the marginal effect of an extra year of schooling should be interpreted as yielding the marginal effect of formal schooling in reducing the probability of lay-off *within enterprises choosing workers for layoff*.

Which worker characteristics are likely to raise the probability of lay-off and which will reduce it? Characteristics that make a worker more productive should reduce the probability of lay-off, *ceteris paribus*. Therefore, both years of formal schooling and a “received training” dummy variable are used as explanatory variables. Firm-specific human capital may increase with tenure at an enterprise and thus a tenure variable is also included in the probit. A worker’s health status is likely to affect productivity, therefore, two health dummies are used as explanators—one to represent poor health and one to represent good health (both are relative to average health, the left-out category.)

Other factors that may influence the likelihood of lay-off include: age, party membership, gender, and marital status. In recent years women have tended to be laid off in higher proportions than men, and older women in higher proportions than younger women. It is not necessarily the case, however, that the characteristics of age and femaleness raise the probability of lay-off once human capital characteristics are controlled for. Party membership may provide a network of relationships that insulate and protect workers from lay-off. The effects of these factors on the probability of lay-off are estimated in the lay-off probit equation and reported below.

It is also possible that enterprises are more willing to lay-off workers that have employed family members who can provide financial support to the laid-off worker than those who do not. Consequently, a variable representing the number of family members with paid employment is entered into the probit regression.

Incentive schemes that tie productivity and/or effort to wages may lower employer costs relative to fixed-wage contracts and afford enterprises more flexibility in economic downturns. Therefore a set of dummy variables is used in the probit regression to control for those paid on piece rate or by the hour (as opposed to those on a fixed salary).

Finally, it is possible that education and training affect the likelihood of lay-off partially or mainly through occupational channels--the majority of the laid-off workers are production line workers (see Table 1). To assess the effects of education and training on the probability of lay-off, net of occupation, I estimate a second set of lay-off probits with occupational dummy variables.

Factors Affecting the Probability of Re-Employment

One of the most important factors influencing the probability of re-employment is the state of the economy in the worker's locality. The cities in our sample vary considerably in terms of economic well being with Xian, Wuhan, and Changchun trailing far behind Nanjing, Tianjin, and Beijing. This factor (health of the local economy) is controlled for by means of city dummy variables with Beijing as the base case.

Personal productive characteristics should also be listed amongst the most important factors in predicting the likelihood of rehire. Therefore human capital variables (schooling, job training, and years of work experience) and health status variables (good health and poor health) are used as explanators.

It is possible that party membership provides a network/set of connections useful in finding work and a party-membership dummy is thus used to test this proposition. Gender and marital status are also controlled for in the re-employment probit estimation for reasons parallel to those explained above in the section on lay-offs.

The effect of the duration of lay-off is tested by including in the probit equation a variable that represents the number of months that a worker has been laid-off. Workers without the support of either unemployment insurance or the income of other family members may be more inclined to accept early but less than ideal job offers than those with such support.

Sector dummies representing the ownership sector of the last job before lay off are used as independent variables in the probit to allow for the possibility that employers place differing values on the experience (and work habits and attitudes) gained in

previous employment at an enterprise of a particular form of ownership. State ownership is the base case.

Returns to Education –

Since industrial reform did not significantly influence urban enterprises until 1984, Meng and Kidd's (1997) estimates for 1981 can be considered as yielding returns to education in the pre-reform era. They reported a return to education of only 2.5 percent for men in the state-owned sector

As early as 1988, even though the rates of return for the employees in the state-owned sector continued to be low (2.6 percent), the rates of return for new labor market entrants (6.4 percent) and for collective (4.1 percent) and private-sector workers (9.6 percent) were higher and in the range that we find in East Asian market economies with smoothly functioning labor markets (Maurer-Fazio 1994). Given the extent of wage-compression in pre-reform China, human capital accumulation is likely to be increasingly recognized and rewarded as the Chinese economic reforms progressed and market forces permeate the work place. Econometric analysis of data from the early and mid-1990s corroborates this expectation (Maurer-Fazio 1999, Knight and Song 1993, and Li and Gustafsson 1999).

Given the further incursion of market forces into the urban Chinese workplace in the late 1990s, it seems likely that we would observe further increases in the returns to investments in schooling and training. To the extent that the work place exhibits features of both the legacy of its pre-reform assignment and reward system and the post-reform market system, it is possible that the returns to education vary according to the degree of marketization. I thus hypothesize that workers who find their jobs through a competitive

market means (as opposed to those who obtained their jobs through a non-market, uncompetitive mechanism) will have greater rewards to their human capital in general, and to their schooling in particular.

Of special interest here is the group of workers who have experienced a lay-off and then found new employment. Given that these workers have all found their new jobs in the post-reform period, to what extent are their productive characteristics rewarded?

The rewards to schooling here are calculated from Mincerian earnings functions. The dependent variable in the underlying regressions is the natural log of hourly earnings, which include wages, subsidies, and bonuses but do not take into account employer-provided benefits such as medical insurance, pension accruals, or housing. The independent variables include years of schooling, years of work experience, the number of times a worker has changed his/her work unit (*danwei*), party membership, marital status, city of residence, enterprise ownership sector, health status, and payment method. The return to education is calculated and expressed in percentage terms by taking the coefficient on years of schooling from the Mincerian earnings function and multiplying it by 100.

Empirical Results

Probability of Lay-Off

Each of the posited factors (with the exception of marital status) significantly affect the likelihood of being laid-off. (See Table 2.) The marginal effect of an incremental year of schooling is a 2.6 percent reduction in the probability of lay-off. Keep in mind that each of the marginal effects here is based on a sample of firms that has chosen to lay off some of its workers while keeping others on the job. Employees who have received on-the-job training are 6.2 percent less likely to be laid off than those who

have not received training. It appears that attachment to one's employer provides a small measure of protection—each additional year spent at the current employer (*danwei*) reduces the chances of being chosen for lay-off by 0.39 percent. Being in good health as opposed to average health reduces the likelihood of lay-off by 4.2 percent. (Being in poor health appears to increase the probability of lay-off but is not significant at the 10 percent level.)

(Insert Table 2 here.)

The role of party membership in protecting workers from lay-off is larger than that of training—party membership reduces the probability of lay-off, *ceteris paribus*, by 6.6 percent. There is an advantage to men in the lay-off process. Being male reduces one's probability of layoff, *ceteris paribus*, by 2.5 percent. Marital status does not have a significant effect on the likelihood of being laid-off. Older workers are somewhat disadvantaged—the marginal effect of an increase in age of one year is an increase in the likelihood of layoff of 0.33 percent. Being on flexible payment schemes as opposed to being paid on a fixed salary reduces the likelihood of layoff quite significantly—by 6.6 for those on piece rate and by 4.4 percent for those paid by the hour.

Finally, the number of family members with paid employment significantly affects the likelihood of lay-off but not in the manner expected. Table 2 reveals a decrease in the probability of lay-off of 0.1 percent for each additional income-earning member in the family.

Probability of Re-employment Once Laid-off

Schooling and job training stand out amongst the posited human capital factors predicted to affect the probability of re-employment once laid off. The marginal effect of

an additional year of schooling is an increase in the probability of re-hire of close to 4 percent. The marginal effect of a worker receiving training at his or her last job before being laid off is large—it increases the probability of re-hire by over 10 percent.

(Insert Table 3 here.)

In terms of location, workers in Changchun and Wuhan have significantly lower probabilities of being rehired than workers in Beijing, with marginal effects of –13 and –11 percent, respectively. Surprisingly, given the poor state of the local economy, the coefficient on Xian, while negative, is insignificant.

The only other factor beside schooling, training and location that has a significant role in explaining the probability of being rehired is the duration of layoff. Each additional month since being laid off increases the likelihood of being rehired by approximately 0.4 percent. Party membership, years of work experience, gender, marital status, health status, the number of family members with paid employment, and whether the last job provided unemployment insurance all proved to be statistically insignificant in the estimated probit equation.

Returns to Education

Table 4 reports three sets of returns to education based on Mincerian earnings functions that regress an individual's natural log of hourly earnings on an array of explanatory variables that measure his or her schooling, work experience, and number of changes of employer as well as controlling for location, payment method, ownership sector and health status.

(Insert Table 4 here.)

The first set of results reports returns to education for all of the continuously employed urban residents in our sample (that is, those not laid off by the firms that anchor the surveys). This set of workers is then divided first by gender, then by education level (high vs. low), and finally by whether the workers used a clearly competitive method to find their jobs as opposed to being either assigned to their position or being introduced by family members.

The coefficients on years of schooling in the underlying regressions were statistically significant for each of the groups in this first set. As revealed in Table 4 the returns vary from a low of 2.4 percent for the never laid-off females to a high of 5.5 percent to those who found work competitively. The return for the group as a whole was 3.5 percent. This low overall rate of return does not reflect the expected continuing trend of increasing recognition of human capital in remuneration determination. However, given the nature of this sample with its relatively high proportion of state-sector employees and over sampling of firms engaged in layoffs the result is not altogether surprising.

The second set of results deals with the same group of workers—the employed urban residents not laid off by the firms in our sample. This set of results differs from the first in that the underlying regressions control for firm by entering firm dummies in the regressions. (The controls for ownership sector and location are therefore necessarily left out.) These within firm estimates of returns to education are consistently lower than the across firm estimates and range from a low 2.3 percent for workers assigned to their jobs to a high of 3.2 percent for workers with 12 years or less schooling.

The final set of results in Table 4 reports the returns to education experienced by workers who have been laid off and subsequently re-employed. The rewards to human capital accumulation appear to be greater for this group of urban workers (in arguably the most competitive sphere of China's labor system) than for those who have never been laid off. The return to a year of schooling for the group is 4.5 percent with male rehired workers realizing a return of 7.1 percent and women 3.4 percent. Those who reported using a clearly competitive method of finding work have a return of 11.6 percent to an additional year of schooling.

Conclusions

In urban China's pre-reform labor system the State guaranteed workers a job. Wages were paid according to State-determined scales. Education was so poorly rewarded that some claim the pay scale exhibited a brain/brawn inversion. As the reforms proceeded, wage dispersion increased and market forces began to influence remuneration decisions. Never-the-less, out of apprehension about unemployment and social stability the Chinese leadership resisted giving enterprise managers the right to determine the size of their labor forces. In 1997 the leadership's concerns about the inefficiency of state-owned enterprises began to outweigh its worries about dealing with large numbers of unemployed urban workers. Workers were faced with the very real prospects of lay off and unemployment. Enterprises shed redundant workers in record numbers and, as mentioned above, by year's end 1999 over 25 million workers had been placed on *xiagang* status.

The results of the above empirical analysis demonstrate that education has become a key determinant of labor market outcomes in China's rapidly changing work

environment. Education's role is no longer restricted to its function in wage determination. Educational attainment is now an important factor in the lay-off decision—the more education a worker has the better his/ her protection from lay off. Similarly, the more education a worker has the better his/her chances of finding new employment once laid off. The education of re-employed workers, arguably those in the most competitive sphere of China's urban labor system, is rewarded more, as measured in terms of incremental earnings for each additional year of schooling, than that of the continuously employed.

References

- Appelton et al. *forthcoming*. "Labour Retrenchment in China: Determinants and Consequences," *China Economic Review*.
- Knight, John; Song, Lina. 1993, "Why Urban Wages Differ in China," in Griffin, Keith Zhao, Renwei, eds., *The Distribution of Income in China*, New York: St. Martin's Press. pp. 216-84.
- Li, Ning. 1998. "Re-employment: A Solemn Scheme in 1998", *Beijing Review*, May 18-24, pp.9-13.
- Li, Ning. 1997. "Promising Reemployment Project", *Beijing Review*, August 18-24, pp.9-13.
- Li, Shi and Gustafsson, Bjorn. 1999. "Zhongguo chengzhen zhigong shouru de xinbie chayi fenxi" [An Analysis of Gender Differences in Urban Workers' Income] in Zhao Ren Wei et al (ed.) *Zhongguo jumin shouru fenpei zai yanjiu: jingji gaige he fazhan zhong de shouru fenpei* [Further Research on the Distribution of Chinese Household Income: the Distribution Of Income During Economic Reform and Development]. China Finance and Economics Publishing House: Beijing. pp.556-593.
- Maurer-Fazio, Margaret. 1994. *An Analysis of the Emerging Labor Market in the People's Republic of China and its Effect on Rates of Return to Investments in Education*. Ph.D. Dissertation: Department of Economics, University of Pittsburgh.
- Maurer-Fazio, Margaret. 1999. "Education and Earnings in China's Transition to a Market Economy: Survey Evidence from 1989 and 1992," *China Economic Review*, Volume 10, No. 1, pp.17-40.
- Meng, Xin. 2001. "Economic Restructuring and Income Inequality in Urban China," unpublished manuscript, Research School of Pacific and Asian Studies, Australian National University,
- Meng, Xin and Michael Kidd. 1997. "Labor Market Reform and the Changing Structure of Wage Determination in China's State Sector during the 1980s," *Journal of Comparative Economics*. Volume 25 No.3. pp.403-21.
- Mincer, Jacob. 1974. *Schooling, Experience and Earnings*. New York: Columbia University Press.

Rural Development Institute, Chinese Academy of Social Sciences. 1998, *1997-98: Zhongguo nongcun jingji xingshe fenxi yu yuce* [China's rural economic situation – analysis and forecast 1997-98] Beijing: Shehui kexue wenxian chubanshe.

Zhongguo laodong tongji nianjian [China Labour Statistical Yearbook] Beijing: Zhongguo tongji chubanshe, 1998, 1999, 2000.

Table 1– Sample Means and Proportions, Chinese Urban Labor Markets 1999-2000

		Urban		Laid-off			
		Workers	Male	Female	Workers	Male	Female
		Urban W.	Urban W.		Laid-off	Laid-off	
Background	PERSONAL INFORMATION						
	% Male	51.73			43.46		
	Age	40.29	40.32	40.26	39.20	39.95	38.62
	% Married	83.84	81.98	85.83	83.51	78.78	87.12
	% Single	14.58	16.97	12.04	11.53	16.91	7.41
	% Divorced	1.20	0.95	1.46	4.25	3.71	4.68
	% Party members	12.28	13.06	11.43	2.26	3.86	1.03
	% Youth League members	16.72	15.95	17.55	8.86	9.51	8.39
	Years of schooling	11.67	11.58	11.82	10.57	10.42	10.68
Years working experience	19.14	20.31	17.88	20.01	20.84	19.39	
Education	% No formal education	0.05	0.11	0.00	0.19	0.30	0.11
	% Junior primary (3 years and less)	0.00	0.00	0.00	0.32	0.45	0.23
	% Primary graduate	1.25	1.89	0.56	2.78	3.42	2.29
	% Junior middle school graduate	22.74	26.32	18.92	35.08	40.48	30.81
	% Technical and specialized highschool graduate	8.49	8.74	8.22	9.43	10.42	8.71
	% Senior middle school graduate	25.84	22.74	29.17	31.20	23.51	37.11
	% Vocational highschool graduate	13.00	11.79	14.30	9.04	9.38	8.82
	% Vocational college graduate	20.29	18.95	21.73	9.04	8.18	9.74
	% University graduate	8.16	9.37	6.87	2.84	3.72	2.18
% Post-graduate graduate	0.16	0.11	0.23	0.06	0.15	0.00	
Income (yuan)	CURRENT/LATEST JOB INFORMATION						
	Monthly income from current/last job, of which*	552.68	575.77	528.25	416.50	438.67	399.16
	Salary	418.27	426.82	408.26	306.52	309.39	305.52
	Bonus	115.09	114.69	113.53	54.79	70.30	42.26
	Subsidy	83.79	88.79	78.43	51.44	54.61	48.57
	Income-in-kind				3.09	3.38	2.57
	Others	43.1	40.41	46.34	13.15	13.45	12.36
	Hourly wage rate at current/last job*	3.37	3.46	3.23	2.49	2.58	2.41
	Monthly income from new job if laid off and rehired				571.00	627.10	535.20
Hourly wage rate at new job if laid off and rehired				3.10	3.22	3.03	
Number of Hours and Days Worked	Hours worked per day at current/last job*	8.13	8.24	8.01	7.99	8.03	7.96
	Days worked per week at current/ last job*	5.32	5.39	5.26	5.45	5.48	5.44
	Hours worked per day at new job if rehired				8.46	8.84	8.22
	Days worked per week at new job if rehired				5.68	5.87	5.56
Job Training	% received training	65.29	67.54	62.83	48.57	50.31	47.02
	years worked at current/last enterprise*	15.51	16.31	14.67	15.91	16.78	15.25

Table 1 Continued

		Urban			Laid-off		
		Workers	Male	Female	Workers	Male	Female
			Urban W.	Urban W.		Laid-off	Laid-off
CURRENT/LAST JOB INFORMATION, CONT.*							
Wage payment form	% Piece rate	9.18	9.46	8.88	7.67	7.21	7.94
	% Hourly	9.84	8.29	11.50	4.78	4.60	4.93
	% Fixed wage	77.52	78.00	76.99	85.80	86.66	85.20
	% Firm provides medical insurance	49.05	51.88	46.18	53.77	59.00	49.77
	% Firm provides pension	85.96	86.4	85.65	76.15	78.61	74.37
	% Firm provides unemployment insurance	53.81	51.88	53.36	37.79	41.00	35.37
Current working unit's ownership	% State-owned	80.78	84.89	76.38	81.33	85.74	78.00
	% Collective owned	11.78	9.44	14.29	10.54	7.06	13.13
	% Joint venture	1.63	1.68	1.57	1.37	1.65	1.15
	% Joint stock company	0.05	0.10	0.00	4.81	4.05	5.41
	% Privately owned	3.91	2.83	5.06	0.65	0.30	0.92
	% Individually owned	1.36	0.73	2.02	0.46	0.45	0.46
Classification of current job	% Cadre						
	% Permanent	58.31	59.91	56.59	70.53	69.51	71.22
	% Contract	39.76	38.70	40.89	28.63	30.19	27.52
	% Temporary	1.55	1.07	2.06	0.58	0.30	1.03
	% Part-time						
Position in current job	% Upper level cadre	1.74	2.10	1.35	0.32	0.75	
	% Middle level cadre	12.49	17.00	7.66	3.36	4.92	2.17
	% Clerical/Office staff	28.14	22.25	34.46	14.60	9.84	18.31
	% Engineer/Technician	9.29	10.91	7.55	5.88	8.64	2.17
	% Production line worker	40.74	40.71	40.77	65.76	68.26	63.73
	% Service worker	3.86	3.67	4.05	6.59	4.17	8.47
	% Sales staff	1.58	1.68	1.46	2.39	2.53	2.29
Number of Observations	Number of observations	1859	956	892	1564	678	882

* Information based on last job before lay-off for laid-off workers and on current job for all others.

Data Source: Urban Labor Market Integration Project

Table 2 Probit Model of the Probability of Lay Off

Probit Model with Firm Dummies

Variable	Marginal Effect %	Standard Error	Z	P>Z
years of schooling	-2.598	0.003	-8.640	0.000
years at latest danwei	-0.392	0.001	-3.030	0.002
age	0.334	0.001	2.430	0.015
male	-2.495	0.014	-1.830	0.067
married	-2.920	0.021	-1.510	0.130
party member	-6.638	0.009	-3.930	0.000
good health	-4.217	0.017	-2.710	0.007
poor health	3.568	0.035	1.170	0.241
received job training	-6.170	0.015	-4.330	0.000
# of family members employed	-0.103	0.000	-2.330	0.020
piece rate	-6.638	0.010	-3.990	0.000
hourly pay	-4.436	0.019	-1.740	0.081
(firm dummies suppressed)				
Log Likelihood	-631.770			
Wald Chi2(93)	1834.200			
Prob > Chi2	0.000			
Number of Observations	2246			

Base case: Single female who did not receive job training and who is of average health and paid a fixed salary.

Data Source: Urban Labor Market Integration Project

Probit Model with Firm and Occupation Dummies

Variable	Marginal Effect %	Standard Error	Z
years of schooling	-1.906	0.003	-5.960
years at latest danwei	-0.442	0.001	-3.180
age	0.520	0.001	3.470
male	-2.039	0.014	-1.430
married	-3.569	0.021	-1.830
party member	-5.672	0.011	-2.990
good health	-3.427	0.016	-2.260
poor health	3.474	0.035	1.150
received job training	-5.695	0.015	-4.020
# of family members employed	-0.122	0.000	-2.860
piece rate	-7.294	0.008	-5.030
hourly pay	-5.547	0.014	-2.500
(firm and occupation dummies suppressed)			
Log Likelihood	-601.030		
Wald Chi2(100)	1720.42		
Prob > Chi2	0.0000		
Number of Observations	2237		

Base case: Single female production worker who did not receive job training and who is of average health and paid a fixed salary.

Table 3 -- Probit Model for the Probability of Finding Work Once Laid Off

Variable	Marginal Effect %	Standard Error	Z	P>Z
Years of schooling	3.71	0.008	4.87	0.000
Years of work experience	0.38	0.008	0.47	0.642
Experience squared	-0.02	0.000	-0.87	0.383
Duration of unemployment (months)	0.42	0.001	4.50	0.000
Received training at last job	10.36	0.035	2.98	0.003
Male	5.73	0.036	1.60	0.109
Married	-2.29	0.050	-0.46	0.648
Party Member	-2.61	0.110	-0.24	0.813
Good health	-4.77	0.036	-1.34	0.182
Poor Health	-3.24	0.067	-0.48	0.633
Last job provided unemploy.ins.	-1.31	0.036	-0.36	0.719
Tianjin	5.16	0.065	0.80	0.424
Nanjing	1.65	0.062	0.27	0.788
Xian	-7.23	0.068	-1.04	0.299
Changchun	-13.39	0.065	-1.95	0.051
Wuhan	-10.92	0.061	-1.73	0.083
Last employer collective ownership	7.05	0.059	1.21	0.226
Last employer joint venture	9.80	0.072	1.38	0.167
Last employer private enterprise	32.17	0.238	1.18	0.238
# of family members employed	-0.02	0.002	-0.10	0.924
Log Likelihood	-597.703			
LR Chi2 (20)	75.540			
Prob > Chi2	0.000			
Number of Observations	939			

Base case: Single female who is not a party member and did not receive job training and is of average health and was formerly employed by a state-owned enterprise.

Data Source: Urban Labor Market Integration Project

Table 4--Rates of Return to Years of Formal Schooling in Urban Chinese Labor Markets 1999-2000

Sector	Without Firm Dummies		
	Returns* %	Significance	No.of Obs.
Workers with Urban Residence Permit (Without Enterprise Controls)			
All Urban Workers	3.5	0.000	1359
Urban Males	4.4	0.000	796
Urban Females	2.4	0.001	754
Urban Workers > 12 years of schooling	3.3	0.032	532
Urban Workers <= 12 years of schooling	3.7	0.000	1018
Urban Workers--competitively found jobs	5.5	0.000	453
Urban Workers assigned jobs	3.0	0.000	1090
Workers with Urban Residence Permit (Controlling for Enterprise)			
All Urban Workers	2.9	0.000	1361
Urban Males	2.9	0.000	798
Urban Females	2.6	0.000	756
Urban Workers > 12 years of schooling	1.8	0.174	532
Urban Workers <= 12 years of schooling	3.2	0.000	1022
Urban Workers--competitively found jobs	3.0	0.001	454
Urban Workers assigned jobs	2.3	0.000	1093
Rehired Laid-Off Workers**			
All Rehired Workers	4.5	0.002	338
Rehired Males	7.1	0.001	129
Rehired Females	3.4	0.082	209
Rehired Workers > 12 years of schooling	1.1	0.851	55
Rehired Workers <= 12 years of schooling	2.9	0.161	283
Rehired Workers--competitively found jobs	11.6	0.024	70
Rehired Workers introduced to their jobs	4.4	0.004	258

*Returns to schooling here are expressed as percentages which are calculated as the coefficients on years of schooling in the Mincerian earnings functions multiplied by 100.

The dependent variable in the underlying regressions is the natural log of hourly earnings which include wages, subsidies, and bonuses but do not take into account employer-provided benefits such as medical insurance, pension accruals, or housing.

The independent variables include years of schooling, years of work experience, number of times changed danwei party membership, marital status, city of residence, enterprise ownership sector, health status, and payment method.

** The number of Danwei changes was not recorded for laid-off workers and is therefore excluded from the list of regressors.

DAVIDSON INSTITUTE WORKING PAPER SERIES - Most Recent Papers

The entire Working Paper Series may be downloaded free of charge at: www.wdi.bus.umich.edu

CURRENT AS 5/1/02

Publication	Authors	Date
No. 459: The Role of Education in Determining Labor Market Outcomes in Urban China's Transitional Labor Markets	Margaret Maurer-Fazio	Apr. 2002
No. 458: Real and Monetary Convergence within the European Union and Between the European Union and Candidate Countries: A Rolling Cointegration Approach	Josef C. Brada, Ali M. Kutan and Su Zhou	Apr. 2002
No. 457: Credit Ratings as Coordination Mechanisms	Arnoud W. A. Boot and Todd T. Milbourn	Mar. 2002
No. 456: Balkan and Mediterranean Candidates for European Union Membership: The Convergence of their Monetary Policy with that of the European Central Bank	Josef C. Brada and Ali M. Kutan	Apr. 2002
No. 455: Russian Financial Transition: The Development of Institutions and Markets for Growth	David M. Kemme	Oct. 2001
No. 454: Does the Market Pay Off? Earnings Inequality and Returns to Education in Urban China	Xiaogang Wu and Yu Xie	Apr. 2002
No. 453: Entrepreneurs' Access to Private Equity in China: The Role of Social Capital	Bat Batjargal and Mannie M. Liu	Apr. 2002
No. 452: The Determinants of Privatised Enterprise Performance in Russia	Alan A. Bevan, Saul Estrin, Boris Kuznetsov, Mark E. Schaffer, Manuela Angelucci, Julian Fennema and Giovanni Mangiarotti	June 2001
No. 451: Determinants of Financial Distress: What Drives Bankruptcy in a Transition Economy? The Czech Republic Case	Lubomír Lízal	Jan. 2002
No. 450: Corporate Governance and the Global Social Void	Lee A. Tavis	Oct. 2001
No. 449: Financial Architecture and Economic Performance: International Evidence	Solomon Tadesse	Aug. 2001
No. 448: Growth Slowdown Under Central Planning: A Model of Poor Incentives	Zuzana Brixiová and Aleš Bulír	Mar. 2002
No. 447: Disentangling Treatment Effects of Polish Active Labor Market Policies: Evidence from Matched Samples	Jochen Kluge, Hartmut Lehmann, and Christoph M. Schmidt	Jan. 2002
No. 446: The Impact of Socialist Imprinting and Search for Knowledge on Resource Change: An Empirical Study of Firms in Lithuania	Aldas Kriauciunas and Prashant Kale	Mar. 2002
No. 445: The Costs, Wealth Effects, and Determinants of International Capital Raising: Evidence from Public Yankee Bonds	Darius P. Miller and John J. Puthenpurackal	Oct. 2001
No. 444: Financial Institutions, Contagious Risks, and Financial Crises	Haizhou Huang and Chenggang Xu	Nov. 2001
No. 443: Banks as Catalysts for Industrialization	Marco Da Rin and Thomas Hellmann	Oct. 2001
No. 442: Bank-Based or Market-Based Financial Systems: Which is Better?	Ross Levine	Feb. 2002
No. 441: Migration and Regional Adjustment and Asymmetric Shocks in Transition Economies	Jan Fidrmuc	Feb. 2002
No. 440: Employment and Wages in Enterprises Under Communism and in Transition: Evidence From Central Europe and Russia	Swati Basu, Saul Estrin, and Jan Svejnar	June 2000
No. 439: Small business in Russia: A Case Study of St. Petersburg	Alessandro Kihlgren	Jan. 2002
No. 438: Foreign Direct Investment as Technology Transferred: Some Panel Evidence from the Transition Economies	Nauro F. Campos and Yuko Kinoshita	Jan. 2002
No. 437: Whistleblowing, MNC's and Peace	Terry Morehead Dworkin	Feb. 2002
No. 436: A Note on Measuring the Unofficial Economy in the Former Soviet Republics	Michael Alexeev and William Pyle	Sept. 2001