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ABSTRACT

This paper proposes a model of selective mobility of workers from the state sector to the market sector to illustrate how the market transition has led to earnings inequality in former state socialist countries. Analysis of the survey data collected in 2000 from selected Chinese cities reveals that recent entrants into the market are driven by two different institutional processes – some are self-selected for higher economic returns and some are pushed into the market through layoffs, resulting in a more heterogeneous body of workers in the market sector than before. Propensity score analyses demonstrate that an early market entry has no causal effect on earnings, whereas the effect of a late market entry on earnings is negatively associated with the propensity of making such a transition. Those who would otherwise do well in the state sector and therefore have a lower propensity for entering the market benefit more from the entry. The commonly observed higher earnings in the market sector are limited only to a subgroup of later entrants who are self-selected into the market.
INTRODUCTION

Empirical analysis of stratification deals primarily with the stratification outcomes, namely the inequalities in education, occupation, and income among different social groups. Studies of the underlying process through which such inequalities are produced, however, are generally missing in the literature (Blalock 1991). Therefore, when sociologists attempt to make inferences about the causal mechanisms of inequality, they have to rely on many overly simplistic and untested assumptions, often leading to substantial bias and untenable conclusions.

The existing literature on social inequality and stratification in former state socialist countries illustrates this problem. The institutional transition to market economies in China and East European countries has re-stimulated scholars’ theoretical interests in how macro-level social transformation has reshaped the structure of inequality (Nee 1989; Szelényi 1978). Early empirical research in this field mainly relied on the investigation of income inequality, particularly on returns to human capital and political power, to infer the changes in the mechanism of social stratification (e.g., Bian and Logan 1996; Gerber and Hout 1998; Nee 1989, 1991, 1996; Parish and Michelson 1996; Róna-Tas 1994; Xie and Hannum 1996). Such an “intellectual leap” from the observed income inequality to the underlying causal mechanisms initiated an unresolved debate among sociologists on the social consequences of the market transition in the 1990s (Cao and Nee 2000; Zhou 2000).

Recent studies have shifted the theoretical paradigm by specifying concrete institutional settings or intermediate processes through which income inequality is generated (Gerber 2002; Walder 2002, 2003; Wu 2002; Wu and Xie 2003; Wu 2006; Zhou 2000). In analyzing income determination, scholars emphasized structural changes in the emerging labor markets and workers’ mobility in the process of producing new inequalities. For instance, rural China’s rapid economic expansions in the 1980s created a lot of opportunities for wage employment other than farming and entrepreneurship; as a result, ordinary peasants’ incomes from these sources substantially altered the income distribution among different social groups (Walder 2002). In post-Soviet Russia, “shock therapy” led to sweeping structural changes in labor market opportunities, driving individuals’ labor market transitions (Gerber 2002) and thereby affecting income inequalities (Gerber and Hout 1998).

The emphasis on the effect of structural changes in labor markets on social stratification has moved a further step towards understanding the process of how diverse stratification outcomes are produced in the context of macro social changes in post-socialist countries. This approach links the studies of social stratification in transition economies to a broad literature on labor market processes in developed capitalist economies (e.g., DiPrete 1993; DiPrete and Nonnemaker 1997). However, the story told is only one-sided. Unless one is willing to make the fundamental assumption either that individual behaviors are nearly completely determined by structural factors or, if not, that individual differences are simply cancelled out in some sort of aggregation process, it is difficult to account for structural changes without examining the more micro- or individual-level process that undergirds them (Blalock 1991; Blau 1977; Hannan 1990).

From this perspective, Wu and Xie (2003) argued that workers are dynamic social actors who are not simply affected by the market, but rather respond to it by actively situating themselves in the labor markets. Based on individuals’ mobility histories in urban China, Wu and Xie (2003) characterized four types of workers: those who were in the state sector initially and continued to stay there (“stayers”), those who entered the market sector early and stayed there (“early birds”), those who began in the state sector but
later transferred to the market sector (“later entrants.”), and those who initially were in the market sector but later retreated to the state sector (“market losers”). They examined differential earnings returns to education among early birds and later entrants in the market sector in comparison with stayers in the state sector.\footnote{Only a few cases of market losers were documented. They were therefore excluded from Wu and Xie’s (2003) analysis.}

Wu and Xie’s (2003) contribution is primarily conceptual, and their empirical analyses are incomplete in two regards. First, while the typology of workers they developed is based on the assumption that the type of entrants into the market sector varied in different reform stages, the differential mobility processes from the state sector to the market sector have never been empirically demonstrated. Second, based on evidence that early birds and stayers did not differ in their average earnings and earnings returns to education, Wu and Xie (2003) challenged the prevailing wisdom that higher earnings returns to education were caused by the market mechanism. However, the advantages that later entrants enjoyed over stayers were not explained (Jann 2005; Xie and Wu 2005).

In this paper, I provide a micro perspective on individual workers’ labor market transitions and their effects on earnings inequality. Based on the survey data collected in 2000 in ten cities, I examine the patterns of entry into the market sector in China, with special attention given to voluntary and involuntary entry in the late reform period since 1993. To estimate the causal effect of labor market transitions on earnings, I employ the propensity-score matching method in causal inferences.

INDIVIDUALS’ LABOR MARKET TRANSITIONS, GROUP HETEROGENEITY, AND EARNINGS INEQUALITY

For the past few decades or so, economic reforms in former state socialist countries have led to the emergence of a market sector in the redistributive economy. The market sector has offered “a new window of opportunity” for social mobility, thus yielding important implications on changes in social stratification (Nee 1989). In the dual opportunity structure, “one could climb the rank order of the bureaucratic hierarchy, or one could try the market” (Szelényi 1988: 65). The question under debate — who wins and who loses in the course of market transition — to a much extent is contingent upon whom stayed in the hierarchy and whom has switched to the market sector (Szelényi and Kostello 1996).

Workers’ labor market transition is an integral part of the transition from state socialism to market capitalism. For example, the rate of job mobility in China, particularly from the redistributive state sector to the market sector, has dramatically increased since the economic reform. In 1978, only 150,000 Chinese workers in the entire country were employed in the market sector; the employed workers in the market sector climbed to 62,410,000 in 1999, with an increase of 416 times within two decades (National Bureau of Statistics 2000).

Such dramatic changes in labor mobility were by no means a random process, but reflected individuals’ selective mobility in response to the changing opportunity structures during market reforms (Wu 2006). There have been some anecdotal and contradictory accounts of how different social groups associated themselves with the new market opportunities. In his early study of Hungarian rural entrepreneurship, Szelényi (1988) found that cadres were less likely to participate in market-oriented businesses and the new economic elite more likely emerged from less privileged groups. Various surveys conducted in urban China in the mid-1980s showed that most private entrepreneurs and individual business owners (getihu) were migrant peasants, unemployed youth, dismissed workers, former criminals
released from prisons, and retirees, who were unable to secure employment in the state sector (Davis 1999; Gold 1990; Li 1993). Zhou, Tuman, and Moen (1997) reported minimal mobility from the state sector to the market sector in urban China, especially among those with high human and political capital (also see Gold 1991; Li 1993).

However, in post-1989 Hungary after the collapse of the communist regime, the communist elites became more likely than ordinary workers to convert themselves into corporate entrepreneurs and to maintain their economic advantages (Róna-Tas 1994). In China, with the Communist Party still firmly holding onto political power, the market economy gained full legitimacy in 1992 when the paramount leader Deng Xiaoping made his famous trip to southern China and called for further economic reforms. Cadres and professionals increasingly started giving up their career opportunities within the state sector and seeking new advantages in the market sector. A new Chinese phrase, *xia hai* ("jumping into the sea"), was coined to refer to the new phenomenon of moving into the market sector (Wu and Xie 2003; Wu 2006).

Szelényi and Kostello (1996) brought together different and somewhat contradictory observations of entry into the market sector by relating them to the process of marketization. According to them, in the early stages of the economic reforms when participation in the market was highly risky and required little skill, entrants into the market sector tended to be those in the low tiers of the social hierarchy who were not at risk of losing privileges like those enjoyed by workers in the state sector. However, as marketization proceeded and the risks in the market were further reduced, workers with more marketable skills started to seek the new opportunities available in the market. Communist cadres also learned to embrace the market to cash in on their political and social capital (Wu 2006). In the face of competition from these groups "with more to lose but also more to gain," the early market pioneers were marginalized under certain circumstances (Szelényi and Kostello 1996:1089). Hence, workers are fluid in the labor markets and their mobility into the market sector is unlikely to be exogenous to the process of marketization. It is this underlying social process that was directly responsible for different stratification outcomes observed by many scholars involved in the debate.

Not all workers are rational actors who can control their own fate and maximize their benefits in the course of marketization. Market transitions bring not only new opportunities for people to take advantage of, but also sufferings from job losses and downward mobility, particularly in the late reform period. Gerber and Hout (1997) presented a transition scenario that was clearly at odds with the claims in Nee’s market transition theory (Nee 1989). After the sudden collapse of the Soviet Union, the sweeping transition to capitalism did not increase returns to human capital and to professionals in post-socialist Russia. Since the mid-1990s in China, the growth of the private economy has gained a new momentum, which, on one hand, attracted talented workers from the state sector, and on the other hand, pushed some state-owned enterprises into bankruptcy because of market competition. Many workers were let go (*xiagang*) and thrown into the market for a living (Cai 2002; Solinger 2002).²

²The Chinese government’s statistics reported that there were 12.7 million laid-off workers at the end of 1997, 8.77 million at the end of 1998, 9.37 million at the end of 1999, and 9.11 million at the end of 2000. These figures include only those who were still looking for jobs at the end of the respective year. More workers have suffered from the experience of being laid off, however (Xie 2006, p 23). If the officially registered unemployed and unemployed peasant laborers in cities are counted, the real unemployment rate at the end of 2000 reached about 8 to 9 percent (see other estimates in Solinger 2001).
Hence, the fact that workers recently entered the market sector through two qualitatively different mechanisms—through layoffs that pushed them into the market involuntarily or through self-selection that allowed them to voluntarily “jump” into the market sector for new opportunities—further enhances the heterogeneity of workers in the market sector and complicated our investigation of the impact of the market transition on stratification outcomes. Compared with those stayed in the state sector, the early market entrants came mostly from disadvantaged backgrounds and they had little chance to do well in the state sector; among the recent market entrants, those who were forced to leave the state sector might possess less human and political capital or other unobserved characteristics negatively associated with potential earnings, whereas those who were self-selected into the market sector might possess certain observable or unobservable characteristics that are positively associated with potential earnings. That the workers who entered the market through these two mechanisms fared differently has been well documented by some ethnographic researchers (e.g., Solinger 2002).

These differential sorting processes of workers into the market sector are endogenous to the pace of marketization and therefore should be incorporated into the analysis of the change in earnings inequality in the context of market transitions. Previous research in this field has largely ignored such varying processes and has relied on comparisons among highly heterogeneous groups to make causal inferences on the effects of the political or market institutions (mechanisms) on income inequality. Without knowing how individuals are sorted into different social groups/sectors, the estimates of group differences in earnings based on aggregate data are likely to be biased, and the interpretation that the group differences are caused by group membership is unwarranted (Gerber 2000; Wu and Xie 2003).

**RESEARCH DESIGN AND METHODOLOGY: BRINGING THE PROCESS BACK IN**

Because the social processes through which workers entered the market sector have important implications on how workers fare in the labor markets, the earnings regimes for workers in the market sector result from a cumulative and historical process and thus should be treated as such in an analysis. When the analysis is based on cross-sectional survey data, it is not appropriate to conduct a simple comparison among workers in different sectors (even with statistical controls) to address the causal effect of the market transition on earnings inequality in post-socialist transition economies.

Figure 1 borrows the typology of workers in Wu and Xie (2003) but redraws the schematic flow chart of Chinese workers’ mobility from the state sector to the market sector in the 1990s. I make the convenient assumption that the market is an absorbing sector so that there is no reverse transition from the market sector to the state sector. I employ 1993 as the cutoff year, which was a year after Deng Xiaoping’s famous trip to southern China in 1992 that initiated a new wave of market reforms, to define early birds and later entrants in the market sector. From a micro perspective, I examine whether or not an individual’s labor market transition has a causal effect on earnings in 2000, the year when the data to be analyzed were collected (more details below).

To advance this inquiry into the sequential mobility process, I reconceptualize the substantive problem within an explicit counterfactual framework (Holland 1986; Manski 1995; Winship and Morgan 1999). Here my substantive interest is the impact of the transition to the market sector on (potential) future earnings in 2000. Conceptually, there are two causal questions in this setup: (1) what is the effect of an early transition (i.e., $d=1$), and (2) what is the effect of a late transition (i.e., $d=2$). The second is sensible only for those workers who did not experience an early transition, while the first involves the
counterfactual comparison between those who experienced an early transition and those who did not, regardless of what happened to them subsequently.

Let \( Y_i^d \) denote the \( i \)th person’s potential outcome if the person has made a transition at time \( d \) \((d=1, 2, \infty)\), with \( d=\infty \) denoting that the person has not made a transition by the end of the study (i.e., a stayer). Note that for an individual worker who has made an early transition \((d=1)\), the counterfactual outcome should follow the principle of “forward looking sequential expectation” (Brand and Xie 2006; Xie and Wu 2005) — a combination of a late transition \((d=2)\) and staying \((d=\infty)\). The average causal effect for the first question thus can be defined as:

\[
E(Y^{d=1}) - E(Y^{d=\infty}) = E(Y^{d=1}) - [E(Y^{d=2})P_2 + E(Y^{d=\infty})(1-P_2)].
\] (1)

The transition probabilities are conditional so that \( P_2 = P(d=2 \mid d > 1) \). For the second question, the comparison is simpler, involving two regime-specific means only:

\[
E(Y^{d=2}) - E(Y^{d=\infty}) = E(Y^{d=2}) - E(Y^{d=\infty}),
\] (2)

It is impossible to compute quantities defined by equations (1) and (2) because only one of the three potential outcomes for each individual worker can be observed. This is known as “the fundamental problem of causal inference” (Holland 1986). The solution is to match each treated subject (entering the market sector) with one or more control subjects (staying in the state sector) such that the treated subjects are identical to control subjects on average with respect to observable characteristics, and the control group serves as the counterfactual. In other words, all systematic differences associated with the transitions can be summarized by a set of observed covariates \((X)\) (Rosenbaum and Rubin 1984). With the balanced likelihood and observable characteristics between the treatment group and the control group, a causal effect of the treatment can be defined as the difference in outcome between the two groups.

One may estimate the expected earnings based on the observed covariates, including human capital, political capital, as well as other individual characteristics. As equations (1) and (2) show, four conditional expectations for the causal analyses are needed: \( E(Y^{d=1} \mid X) \), \( E(Y^{d=1} \mid X) \) for the first question, and \( E(Y^{d=2} \mid X) \), \( E(Y^{d=2} \mid X) \) for the second question. \( E(Y^{d=1} \mid X) \) can be estimated among early birds, \( E(Y^{d=2} \mid X) \) among later entrants, and \( E(Y^{d=2} \mid X) \) among stayers. However, \( E(Y^{d=1} \mid X) \), being a weighted sum of two conditional expectations, should be estimated from both later entrants and stayers.

To use the jargon from the causal inference literature, I consider two “treatments” in the study: an early entry to the market sector and a late entry to the market sector. For the first treatment, the “control” group consists of workers who did not make an early entry and thus includes stayers as well as later entrants. For the second treatment, the “control” group consists of stayers only. In the following analyses, I employ the propensity score matching method, instead of traditional regression models, to obtain the semi-parametric and non-parametric estimators of causal effects of market entry on earnings. This method allows us first to summarize all the differences between the treatment and control groups with a single dimension — the probability/propensity of receiving a particular treatment and then match the two groups with similar propensity scores (stratum). Any differences in earnings between the two groups within each stratum are the average treatment effect on earnings for that stratum (Dehejia and Wahba 1999).

The paper is to focus on the causal effect of the second treatment — a late transition — on earnings, for which Wu and Xie (2003) reported higher average earnings and returns to education. While they speculated that the heterogeneity of the group that consists of both voluntary and involuntary later entrants may contribute to the results, there are no direct measures on the extent to which individual workers feel
that they have control over the sector change. Due to the information gap, most studies on job change and career mobility have simply ignored the distinctions between the two processes and the associated consequences (except for Park and Sandefur 2003).

By combining the propensity score analysis and the substantive information on layoff experience, I rely on the propensity for entering into the market sector to define the extent to which one has control over the job change. Those who have lower propensity scores (based on their observable characteristics) for market entry but indeed have made the transition are assumed to have more control over the change than do those who have higher propensity scores for entry. Hence voluntary and involuntary job shifts are treated as a continuum rather than a dichotomy. I also use the substantive information on whether one has experienced layoff to check the appropriateness of the above definition.

DATA AND VARIABLES

Data

The empirical analyses are based on the data collected from a survey on “Social Changes in Urban China since the Reforms,” which was conducted in 2000 in ten cities in five provinces (Jilin, Shaanxi, Henan, Hunan, and Guangdong) and a province-level municipality (Tianjin). These provinces represent three different geographic regions and also different levels of economic development in China. The capital city of each province and Tianjin, one of the four municipalities directly under the central government’s jurisdiction, were chosen as representative of large cities. In addition, a medium-size city was randomly selected in four of the five provinces (except Shaanxi). The procedure resulted in the selection of ten cities: Changchun, Changsha, Guangzhou, Jilin, Kaifeng, Tianjin, Xi’an, Xiangtan, Zhengzhou, and Zhongshan (see Figure 2). In each city, the multi-stage stratified probability sampling method was used to select individuals aged from 18 to 65 years old. As a result, 4307 individuals were selected, of which 2631 held paid jobs in 2000. The survey contains rich information on respondents’ job mobility histories concerning work organization, occupation, and income in 1985, 1993, and 2000.

In this paper, I investigate the process of labor market transitions in the period between 1993 and 2000. I choose 1993 as the benchmark year for both substantive and methodological reasons. First, 1992 marked a milestone in the history of China’s economic reforms, when Deng Xiaoping made his famous political tour to southern China to push for further market reforms after the Tiananmen crackdown in 1989. I use a one-year lag to gauge the impact of the new policy shift on workers’ transitions in labor markets. Second, the retrospective information from 1993 is subject to fewer recall errors than would be information recalled from earlier years. Finally, focusing on a relatively short period avoids a high sample attrition rate and provides more sample cases in the labor force in both 1993 and 2000. The young cohort who entered the labor force after 1993 is excluded in the analysis.

I use workers’ status in 1993 and 2000 to characterize four types of workers in China’s urban labor markets, namely those in the state sector in both 1993 and 2000 are defined as “stayers;” those in the market sector in both 1993 and 2000 are defined as “early birds;” and those in the state sector in 1993 but in the market sector in 2000 are defined as “late entrants.” After eliminating those not active in the labor force in either 1993 or 2000, I obtained 1941 cases for analysis.

3. According to the author’s calculation based on the 2000 Population Census of China, the labor force participation rate was 72 percent for men and women aged between 18 and 65 in urban areas.
Variables

Distinguishing the market sector from the state sector is crucial to my typology of workers. I employ two criteria to make this distinction: respondent’s affiliated work organizations and respondent’s occupation. Concerning the first criterion, I code workers in the newly emerging types of work organizations, such as “domestic private enterprise,” “joint ventures/foreign-invested firm” (sanzi qiye), “individual-owned business” (geti hu), and “other self-employed business,” as in the market sector and workers in “government agencies,” “state institutions,” “state-enterprises,” and “collective enterprises” as in the state (public) sector. Concerning the second criterion, I code workers whose occupations are “individual business-owners” (getihu), “private enterprise owners” (siying qiye zhu), and “other self-employed occupations” as in the market sector.

The two criteria are then combined to define the number of workers in the market sector and in the state sector. Workers are coded as in the market sector if they meet either of the two criteria. This corresponds to the broad measure employed by Wu and Xie (2003). As Table 1 shows, in 1993, 271 of 1941 respondents in the labor force worked in the market sector; as of 2000, 253 of them (“early birds”) still worked in the market sector, whereas 18 had returned to the state sector (“market losers”). During the same period, 182 of 1670 workers in the state sector in 1993 had moved into the market sector by 2000 (“later entrants), with the rest continuing to stay in the state sector (“stayers”). The later entrants and early birds constituted workers in the market sector, accounting from 23 percent of all workers in 2000, a dramatic increase from 14 percent in 1993. As expected, mobility from the market sector to the state sector was rare, and the 18 “market losers” are excluded in the following analysis.

I utilize earnings as the major indicator of social stratification outcomes. The survey collected information on the total monthly income earned in both 1993 and 2000, measured in RMB yuan (Chinese currency, 1RMB yuan = 0.12 USD). I include individual characteristics commonly used in the studies of earnings determination: education, party membership, age, gender. Education, which denotes human capital, is a continuous variable measured with years of schooling. Whether the respondent is a party member or not measures his/her political capital. It is coded as a dummy variable (yes=1). Age is measured as a continuous variable, and gender is coded as a dummy variable, with male as 1 and female as 0.

A layoff from a state-sector job is a crucial process driving many workers’ entry into the market sector in the late 1990s. The survey asked respondents whether they had experienced a lay-off, and if so, when the first and most recent layoffs occurred. Based on the information, I construct a dummy variable to indicate whether or not a respondent one had layoff experience between 1993 and 2000 (yes=1).

Many observers have reported that those who were sent down to rural areas during the Maoist era continued to be disadvantaged in the labor markets in the reform era after they returned to cities (Hung and Chiu 2003; Zhou and Hou 1999). This important life course event may have a negative impact on subsequent layoffs and on entry into the market sector. I code whether one had “sent-down” experience as a dummy variable (yes=1).

Job satisfaction in 1993 affects workers’ tendency for mobility. The more satisfied with their job in the state sector, the less likely workers are to change jobs and enter the market sector. Job satisfaction is measured on a scale from 1 to 4 and treated as a continuous variable in the analysis.

As I have chosen 1993 as the baseline year, those who entered the labor force after 1993 are excluded from the analysis. Our “early birds,” however, cover all workers who entered in the labor force in
different years before 1993. Many of these early pioneers came from disadvantaged backgrounds and were unable to locate a formal job in the state sector. I create a dummy variable to indicate whether the respondent had already been in the market sector in 1985. I refer to them as “early birds” relative to those who entered the market in or after 1993.

Finally, because the large regional variations in economic structures and the pace of the reforms have created varying opportunities for entering the market sector and consequently for income inequality, I create five dummy variables representing the provinces from which the samples were drawn.

As shown in the flow chart of the labor market transition in Figure 1, by the year of 1993, among the surveyed 1,923 workers in the labor force (not including 18 “market losers”), 253 had made an early transition and worked in the market sector \((d=1)\). They are characterized as early birds in Table 1. Of the remaining 1,670 workers in the state sector, 182 workers had moved into the market sector between 1993 and 2000.

Table 2 presents descriptive statistics for the entire sample and the comparisons among three types of workers. For instance, in 2000, early birds on average earned 1,558 RMB yuan per month and later entrants earned 1,412 yuan per month, compared to stayers who earned 949 RMB yuan per month. In 1993, their respective monthly earnings were 1,347 RMB yuan, 456 RMB yuan and 532 RMB yuan. It seems that later entrants gained in higher income from 1993 to 2000 by entering the market sector.

Pertaining to the two variables — education and Chinese Communist Party membership — which are of particular interest to some scholars, stayers have the highest years of schooling, whereas early birds are the least educated. Of the stayers, 28.5 percent were party members but only 6 percent of early birds and 13.7 percent of later entrants were party members. Such observations are consistent with the findings reported elsewhere: as the reforms proceeded, while the redistributive state in China continued to be the dominant provider of career opportunities for both the professional and political elite (Walder, Li and Treiman 2000), the market started offering opportunities and increasingly attracted professional and political elite (Wu 2006).

Of all the survey workers in 2000, 10 percent had experienced a layoff between 1993 and 2000. Most of the laid-off workers were highly concentrated among later entrants in the market sector. In fact, 49 percent of later entrants had been laid off workers. Of course, laid-off workers can possibly find another job in the state sector: they constitute 4 percent of all current stayers in the sector.

The following empirical analyses include two major parts. First, I examine, via logistic regressions, the determinants of the likelihood of having layoff experience, and the patterns of entry into the market sector before 1993 and after 1993. Second, I employ the propensity score matching methods to estimate the causal effects of an early market entry and a late market entry on earnings gains in 2000, paying particular attention to the voluntary and involuntary later entrants among those who had switched from the state sector to the market sector after 1993. In the model estimations, data are weighted to represent the general population of the selected cities.

THE PATTERNS OF LAYOFFS AND ENTRY INTO THE MARKET: LOGISTIC REGRESSION ANALYSIS

Table 3 presents estimates for binary logit models predicting the likelihood of having layoff experience for workers between 1993 and 2000 in the state sector. In Model 1, I first include years of schooling, party membership, age, and gender as covariates. I then further introduce in Model 2 the sent-down experience, job satisfaction in 1993, logged monthly earnings in 1993, and province dummies.
As both models indicate, years of schooling are negatively associated with the likelihood of being laid off, and party members are also less likely to be laid off than are non-party members. In Model 2, an additional year of schooling decreases the net odds of being laid off by 10.8 percent (e^{-0.114}) (p<.001); and a party member’s odds of being laid off are only 62.2 percent (e^{-0.475}) of those of a non-party member, controlling for other variables (p<.10). Age, a proxy for work experience, is also negatively associated with the likelihood of being laid off. A year increase in age brings down the net odds of being laid off by 4.1 percent (e^{-0.047}) (p<.001). Men and women, however, do not differ significantly in layoff experience.

I confirm that the sent-down youth in the Maoist era were also more likely to suffer from being laid off in the market reform era — their net odds of being laid off are 66 percent (e^{0.506}) higher than those who had no sent-down experience (Zhou and Hou 1999; Hung and Chiu 2003). Meanwhile, a one point increase in the job satisfaction scale is associated with 61.7 percent (e^{-0.959}) decrease in the net odds of being laid off, and the effect is highly significant (p<.001). This is probably due to the nature of the job itself (e.g., job security), which both affects workers’ satisfaction and the likelihood of being laid off in the process of economic restructuring.

I use the logarithm of monthly earnings in 1993 to capture one’s earning power, which summarizes all the individual characteristics (observable and unobservable) in relation to earnings. Those with more earning power are less likely to be laid off. If the monthly earnings in 1993 increase by one percent, the net odds of being laid off after 1993 decrease by 0.3 percent (e^{-0.311*ln(1.01)}) (p<.05). There are no significant variations among workers across different provinces in the likelihood of being laid off.

Hence, the analysis above suggests that the laid-off workers tended to have lower human and political capital and lower earning power than those who had been able to keep their jobs in the state sector in 1993. These workers, if laid off and pushed into the market sector, would be less likely to do well financially.

Following the flow chart of workers in Figure 1, I estimate two sequential logit models predicting the likelihood of an early entry into the market sector in or before 1993 and of a late entry into the market sector in and after 1993. The models are sequential in the sense that the early birds are contrasted to those remaining in the state sector as of 1993, regardless of whether they made a transition to the market sector later or continued to stay in the state sector. The later entrants are contrasted to those who stayed in the state sector as of 2000.

Table 4 reports the estimated coefficients for the two binary logit models. In both models, I include years of schooling, party membership, age and its squared term, and gender as covariates; I also include whether or not an individual was in the market sector in 1985 in Model 1 to predict the early market entry and job satisfaction and layoff experience since 1993 in Model 2 to predict the late market entry.

Consistent with findings elsewhere (e.g., Wu 2006), both education and party membership deterred an individual’s entry into the market sector before 1993. An additional year of schooling decreases the net odds of an early entry into the market sector by 11 percent (e^{-0.116}), and a party member’s odds of entering the market sector are only 21.6 percent (e^{-4.535}) of the odds of a non-party member, holding constant the other factors. Both effects are statistically significant (p<.05). The effect of age on the likelihood of an early entry is curvilinear, first decreasing and then, after the age of 48.5, increasing. There is no significant difference in the likelihood of entry between men and women and to a large extent across provinces.

I include a dummy variable on whether the respondent had already been in the market in 1985. The result shows that the net odds of being in the market sector in 1993 for those in the market sector in 1985 are 39 times (e^{3.669}) the odds for those who were not, which suggests that a large portion of workers in the market in 1993 indeed entered the market sector quite early.
The effects of both education and party membership on entry into the market, however, have changed since 1993. While a separate analysis (not shown here) with only education, party membership, age and gender indicates that more educated workers are still significantly less likely to enter the market, and that party members are significantly less likely to enter the market than non-party members, the absolute values of the estimated coefficients are much smaller than the corresponding ones for an early entry before 1993 (see also Wu 2006). In Model 2 of Table 4, after layoff experience is controlled, both coefficients for education and party membership become insignificant. Combined with the analysis in Table 3, this result suggests that those who lack human and political capital are more likely to be pushed into the market by layoffs.

Indeed, as Model 2 shows, laid off workers are much more likely to end up in the market sector between 1993 and 2000. The net odds of switching to the market sector after 1993 for workers with layoff experience are 22.5 times \( e^{3.115} \) the odds for those without such experience. On the other hand, job satisfaction in the state sector in 1993 negatively affects the likelihood of entering the market sector. A point increase in the satisfaction scale decreases the net odds of entry by 68.7 percent \( e^{-1.162} \). Both effects are highly significant \( (p<.001) \). There is no variation in the likelihood of a late market entry among workers in different provinces.

The results of the logistic regression analyses suggest that those who entered the market sector in the early period were apparently disadvantaged in human and political capital compared to those who stayed in the state sector, whereas such disadvantages were reduced among those who entered the market in the late period (Wu 2006). Being laid off is identified as a specific process through which human capital and political capital affect a worker’s entry into the market in the late reform era. Those lacking human and political capital are more likely to be laid off in the period; and laid off workers are more likely to enter the market than are workers without such experience.

**ESTIMATING THE CAUSAL EFFECT OF MARKET ENTRY: A PROPENSITY SCORE MATCHING METHOD**

The central concern of the paper is to examine how the change in the process of workers’ entry into the market sector affects earnings inequality at the macro-level, and the specific interest lies in the heterogeneity of later entrants in the market sector generated by two mechanisms — those who entered voluntarily due to self-selection and those who entered involuntarily due to state layoffs (or other forms of forced departure). To address these issues, I employ the propensity score matching method in the causal inference framework.

In the propensity score analysis, two “treatments” can be considered in the study: an early entry to the market sector and a late entry to the market sector. In the first treatment, the “control” group consists of workers who did not make an early entry and thus includes stayers as well as later entrants. In the second treatment, the “control” group consists of stayers. The propensity score matching method allows researchers to summarize all the differences between the treatment and control groups with propensity scores, which are estimated from binary logit models described above. The propensity scores then are stratified to balance both propensity scores and observed covariates; the average treatment effect on earnings within each stratum can be computed. A large literature has shown that the propensity score stratification method can remove large amounts of biases in causal inference with observational data (e.g., Becker and Ichino 2002; Dehejia and Wahba 1999; Winship and Morgan 1999), affording us an easy way to examine differences in observed covariates and compare the groups flexibly and non-parametrically (for
applications in sociological research, see Brand and Halaby 2005; Harding 2003; Morgan 2001; Smith 1997; Xie and Wu 2005).  

In the framework for causal inference, the focus is explicitly on the cross-group differences in outcomes. Group differences in observed covariates are encompassed by the propensity scores. I estimate the propensity score, \( P_1 \), for the first transition based on Model 1 of Table 4, and \( P_2 \) for the second transition, conditional on a worker still being in the state sector as of 1993, based on Model 2 of Table 4.  

I then group the respondents into eight strata of estimated propensity scores to balance both estimated propensity score and covariates between the treatment and comparison groups \((p<.001)\) (Becker and Ichino 2002). The number of cases in each stratum, separated by treatment and control groups, is shown in Figure 3 for the first transition. The figure demonstrates vividly how early birds differ from other workers in observed covariates. Among workers who did not make the transition to become early birds, most of them have very low \((0.143\) or lower) propensities for making such a transition. In contrast, workers who did make the transition have relatively high predicted propensity scores. Without the achieved balance through propensity score stratification, the two groups would be incomparable. The non-comparability of cases is usually masked in estimates based on the traditional regression models (see footnotes 6 and 7).

The propensity model for the second transition differs from that for the first transition because the mechanisms for making the transition changed, particularly in terms of the roles played by human capital and political capital, which have been previously discussed. In Figure 3b, I present the distributions of later entrants and stayers across eight propensity score strata, within which both the propensity score and observed covariates are balanced.  

To answer the question of if the transition to the market has caused an increase in earnings, I conduct detailed analyses of the treatment effect of a market entry in three steps. First, I estimate the treatment effects specific to the propensity score strata. Because there are no systematic differences between the treatment group (entrants to the market sector at a given time) and the control group (stayers in the state sector at a given time), the average earnings differences within a propensity score stratum can thus be interpreted as the average causal effect of market entry for that stratum (Rosenbaum and Rubin 1984). Second, I pool the results across strata under the assumption of a homogeneous treatment effect, which is weighted average of stratum-specific treatment effect. Finally, I allow for heterogeneous treatment effects

4 Alternatively, an endogenous switching regression model can be estimated to deal the problem of selection bias with the observational data (see applications in Gerber 2000, Adamchik and Bedi 2000). Despite its advantages over the matching method in taking into account the unobservable characteristics in model estimation, the switching regression model is unable to address how the effect of treatment varies with the propensity for receiving the treatment.

5 Other variables such as industry and welfare benefits from work units have been explored in the binary logit models. Their effects are not statistically significant and the results from propensity score matching analysis remain largely the same.

6 I use the pscore command in STATA to implement the stratification matching (Becker and Ichino 2002). The values on the X-axis are the inferior boundary of the eight propensity score strata. The 336 workers in the control group whose estimated propensity score is less than the minimum estimated propensity score for the treatment group are discarded because they cannot be matched to any individuals in the treatment group.

7 The 92 workers in the control group whose estimated propensity score is less than the minimum estimated propensity score for the treatment group are discarded.

8 I use the atts command in STATA to estimate the average treated effect on the treated using stratification matching of propensity scores (Becker and Ichino 2002).
through estimating a hierarchical-linear model (HLM) (Raudenbush and Bryk 2002). The two-level models can be specified as the following:

Level 1:  \[ \text{EARNINGS}_{ij} = \beta_{0j} + \beta_{1j}\text{TREATED}_{ij} + \varepsilon_{ij} \]  

(3)

Level 2:  \[ \beta_{1j} = \gamma_{10} + \gamma_{11}\text{STRATUM}_j - \text{RANK}_{ij} + \upsilon_{ij} \]  

(4)

where in equation (3), \( \text{EARNINGS}_{ij} \) stands for monthly earnings in 2001 for \( i \)th in \( j \)th propensity score stratum; \( \text{TREATED}_{ij} \) is a dummy variable indicating whether or the \( i \)th in \( j \)th stratum is indeed in the market sector. The coefficient for the dummy variable, \( \beta_{1j} \), is the mean difference in earnings between the treatment group and control group with the \( j \)th stratum, i.e., the causal effect of treatment within the stratum. In Level 2 Model, equation (4) allows the treatment effect \( \beta_{1j} \) to vary with different strata (\( \text{STRATUM}_j - \text{RANK}_{ij} \)), in which the integer-score rank of a propensity score stratum is used as the predictor of the treatment effect \( \beta_{1j} \). \( \varepsilon_{ij} \) and \( \upsilon_{ij} \) are error terms at individual level and stratum level, respectively.

In Figure 4a, I present the summary findings from the analysis of the treatment effects of an early transition. The dots are point estimates of stratum-specific treatment effects, with corresponding \( t \) values given nearby for the null hypothesis that the treatment effect (denoted by \( Y \), i.e., \( \beta_{1j} \) in equations [3] and [4]) is zero. The results are clear. In only one stratum — the first stratum with the lowest propensity score — can a significant effect of an early transition be detected. If we assume the treatment effect to be homogeneous across the strata and pool the estimates to improve precision, the overall treatment effect is estimated to be 102 RMB yuan, with a standard error of 244, resulting in an insignificant \( t \) value at 0.42 (see footnote 6).

To examine whether the treatment effect varies systematically with the propensity score, I further estimate a HLM model (Raudenbush and Bryk 2002). Results are represented by the linear line in Figure 4a. While it appears that the treatment effect increases positively with the propensity for being treated, this relationship is not statistically significant \((t=1.87, p=0.11)\).

Results for a late transition, summarized in Figure 4b, are quite different from those for an early transition. First, the treatment effect of making a late transition is relatively large and significantly different from zero for the four lowest propensity score strata. If the different strata are pooled together for an overall treatment effect under the homogeneous effect assumption, the estimate is 682 RMB yuan with a standard error of 180, resulting in a highly significant \( t \) value of 3.78. However, the assumption of the homogeneous treatment effect seems not to hold true, as indicated clearly by a downward trend in Figure 4b. The results from HLM model reveals that the size of the treatment effect is strongly and negatively contingent on the propensity score, with a unit change in stratum rank (i.e., crossing a propensity score stratum) associated with a reduction of 191 RMB yuan in the treatment effect (a significant relationship with \( t=-4.1 \)). That is, the benefit of a late transition into the market sector is the greatest among those who were least likely to make such a transition and diminishes with the propensity for making the transition.

**SUMMARY AND DISCUSSION**

To summarize, I have found that the pattern of entry into the market sector in urban China has changed since 1993. While early entrants to the market tend to come from the lower ties of the social hierarchy, the negative effect of human capital and political capital on late entry into the market sector is less evident. I argue that the later entrants are recruited through two processes, in which both education and party
membership play opposite roles. On one hand, as the market reform proceeded, state layoffs took place and workers lacking education and political connections were thrown into the market for survival; on the other hand, the growth of the market economy also attracted increasingly more capable workers from the state sector, who had been able to cash their human capital and political capital for even greater economic advantages (Wu 2006).

The effect of the market entry on earnings varies in two dimensions. First, confirming the earlier findings by Wu and Xie’s (2003) and Xie and Wu (2005), I did not find a premium to an early transition to the market sector, but a later transition into the market sector is associated with higher earnings. Furthermore, I also show that even among later entrants, the benefit of working in the market sector sharply decreases with the propensity for having made the transition. Hence, the key finding of the propensity score analysis is that the market premium is only limited to late entrants who otherwise have a low propensity for making a transition to the market sector.

I linked an individual’s propensity for making transition to the market sector to the degree of how voluntary they feel when the change occurred. These low-propensity late entrants are workers who could have been doing quite well in the state sector but indeed have ended up in the market sector. I labeled them as the voluntary late entrants in contrast to involuntary late entrants who are pushed into the market through layoffs. As plotted in Figure 5, in the two strata with the lowest propensity scores, none of the workers has experienced layoff, whereas in the three strata with the highest propensity scores, all workers had layoff experience. Workers who do well in the state sector and thus are unlikely to lose their jobs have a low likelihood of entering the market. For them, the attraction of the market sector needs to be large enough to overcompensate for the advantages they already enjoy in the state sector. Higher earnings of this subgroup of later entrants lifted the average earnings for the workers in the market sector as a single group.

Hence, without attending to the process through which individuals are allocated or sorted into a group, relying on the comparison of group means to address the causal effect of being in that group may be misleading. In Figure 6, I illustrate how aggregating data inappropriately would likely lead to wrong conclusions. A comparison in earnings between workers in the market sector and in the state sector would show that the former enjoys significantly higher earnings and returns to schooling than does the latter, which have been commonly attributed to the market mechanism at work (e.g., Bian and Logan 1996; Nee 1989; Zhou 2000). Wu and Xie (2003) have questioned this causal explanation. By dividing the workers in the market sector into two subgroups based on their mobility history in the labor market, they reported that the advantages were limited to late entrants only. The propensity score matching analysis in this paper has further disaggregated the later entrants and demonstrated that higher earnings and higher returns to schooling are only limited to some later entrants, who entered the market sector voluntarily in the late reform stage, i.e., those who are more likely to stay in the state sector, given their observed characteristics.

Why do some later entrants perform so well? The propensity score matching analysis in this paper has illustrated a classical case of the endogeneity problems: individuals select their “treatment” based on the anticipated outcome, which is not homogeneous across workers. This suggests a strong self-selection mechanism at work: when workers with a low (latent) propensity of making a transition indeed did make a late transition to the market sector, they benefited the most from the transition. In other words, it is a story about what drives workers to move into the market sector, and our research should be devoted to understanding this micro process and its economic consequences. During the economic reforms in China, workers move from the state sector to the market sector for different reasons, and not always voluntarily. That is the reason why they have also fared differently.
CONCLUSIONS

There exists an intellectual gap in the literature on modern social stratification in general and on post-socialist stratification in particular. Scholars often jump from the observed structure of inequality to the causal mechanisms on the theory of social stratification, without solid knowledge of the underlying social processes that generate the stratification products. Commenting on this gap, the late Hubert M. Blalock (1991) advises that researchers should delimit their theories to what he refers to as allocation processes, through which individuals are assigned or sorted into positions by a series of micro-level decisions.

“Without benefit of more micro analyses, such macro theories are likely to require so many untested assumptions, and to ignore such huge data gaps, our intellectual and ideological biases are likely to predominate, resulting in unanswerable theoretical disputes that merely hamper the process of arriving at a cumulative body of knowledge” (Blalock 1991: 27).

In this paper, I proposed a micro perspective to shed new light on the relationship between the institutional transition to a market economy and the changes in earnings inequality in China. I emphasized the differential sorting processes of workers in the emerging labor markets in understanding how earnings inequalities are produced in the course of China’s economic transition. Using the propensity score method in causal inference literature, I examined the causal effect of an individual worker’s entry into the market sector on earnings gains, and found that an early market entry has no effect on earnings, whereas the effect of a late market entry on earnings is negatively associated with the propensity for making such a transition. Those who would otherwise do well in the state sector and therefore have lower propensity of entering the market have benefited more from the entry. Similar results from another former socialist country (Poland) have been described by Adamchik and Bedi (2000).

I highlighted a group of workers’ self-selection processes of generating earnings inequality in post-socialist urban China. To be certain, such self-selection processes are responding to the institutional transitions at the macro level and interacting with the change in opportunity structures in the labor markets. Future data collection and research should link the two processes and specifically examine the career trajectory among these self-selected later entrants.

I caution about the danger in reliance on group comparisons to make theoretical causal inferences without fully acknowledging the process of how individuals are sorted into a group and thereby the heterogeneity within the group. While the exercise in this paper is focused on the sector difference in earnings, the methodological advice is equally applicable to the study of earnings inequality between party members and non-party members (e.g., Gerber 2000), between cadres and non-cadres (Nee 1996; Walder 2002), and among different types of work organizations (Zhou 2000). I reject the simplistic causal explanations of post-socialism earnings inequality in terms of the redistributive state or the market, and call for further research on the underlying micro process of individuals’ mobility between social positions, constrained and influenced by macro-level institutional transitions, and the aggregate outcome of these processes in the change of inequality structure (Blau 1977; Hannan 1991). Identifying these processes is an intellectually challenging task but a necessary step towards constructing a solid theory on the changing stratification mechanism in post-socialist transitions.
REFERENCES


Li, Qiang. 1993. *Dangdai Zhongguo de Shehui Fenceng Yu Liudong (Social Stratification and Mobility in Contemporary China).* Beijing: China Economy Press. [In Chinese.]


Table 1. Types of Chinese Workers in the Labor Market Transition, 1993 (N=1941)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stayers (1488)</td>
<td>Later Entrants (182)</td>
</tr>
</tbody>
</table>
### Table 2. Unweighted Summary Statistics of Variables for 3 Types Of Workers In 10 Selected Chinese Cities

<table>
<thead>
<tr>
<th>Variables</th>
<th>Overall a</th>
<th>Early Birds</th>
<th>Later Entrants</th>
<th>Stayers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly earnings 2000 (RMB)</td>
<td>1064.4</td>
<td>1558.4</td>
<td>1411.7</td>
<td>948.8</td>
</tr>
<tr>
<td></td>
<td>(1467.4)</td>
<td>(2485.2)</td>
<td>(2337.5)</td>
<td>(1055)</td>
</tr>
<tr>
<td>Monthly earnings 1993 (RMB)</td>
<td>626.0</td>
<td>1347.4</td>
<td>455.5</td>
<td>531.6</td>
</tr>
<tr>
<td></td>
<td>(1997.0)</td>
<td>(5438.2)</td>
<td>(575.1)</td>
<td>(733.2)</td>
</tr>
<tr>
<td>Years of schooling</td>
<td>11.35</td>
<td>9.785</td>
<td>10.86</td>
<td>11.69</td>
</tr>
<tr>
<td></td>
<td>(3.437)</td>
<td>(3.442)</td>
<td>(3.103)</td>
<td>(3.394)</td>
</tr>
<tr>
<td>Party membership (yes=1)</td>
<td>0.242</td>
<td>0.063</td>
<td>0.137</td>
<td>0.285</td>
</tr>
<tr>
<td>Male</td>
<td>0.554</td>
<td>0.585</td>
<td>0.527</td>
<td>0.552</td>
</tr>
<tr>
<td>Age</td>
<td>41.69</td>
<td>38.71</td>
<td>38.96</td>
<td>42.57</td>
</tr>
<tr>
<td></td>
<td>(9.337)</td>
<td>(9.002)</td>
<td>(8.382)</td>
<td>(9.341)</td>
</tr>
<tr>
<td>Layoff experience after 1993 (yes=1)</td>
<td>0.102</td>
<td>-</td>
<td>0.489</td>
<td>0.040</td>
</tr>
<tr>
<td>Sent-down (yes=1)</td>
<td>0.206</td>
<td>0.158</td>
<td>0.165</td>
<td>0.219</td>
</tr>
<tr>
<td>1993 job satisfaction</td>
<td>2.825</td>
<td>2.755</td>
<td>2.464</td>
<td>2.882</td>
</tr>
<tr>
<td></td>
<td>(0.568)</td>
<td>(0.605)</td>
<td>(0.663)</td>
<td>(0.528)</td>
</tr>
<tr>
<td>Market sector in 1985 (yes=1)</td>
<td>0.224</td>
<td>0.368</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Province**

- Guangdong: 0.195, 0.312, 0.187, 0.173
- Hu’nan: 0.173, 0.075, 0.137, 0.194
- He’nan: 0.150, 0.154, 0.203, 0.144
- Tianjin: 0.142, 0.095, 0.126, 0.154
- Jilin: 0.171, 0.158, 0.181, 0.174
- Shaanxi: 0.169, 0.206, 0.165, 0.162

- N of cases: 1938, 253, 182, 1485

---

*a* Including 18 workers who were in the market sector in 1993 but in the state sector in 2000 (market losers).

*b* Figures in parentheses are standard deviations for continuous variables.
Table 3 Binary Logit Models of Being Laid Off Between 1993 and 2000 on Selected Independent Variables: Workers in Ten Chinese Cities

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of schooling</td>
<td>-0.125***</td>
<td>-0.114***</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td>(0.029)</td>
</tr>
<tr>
<td>Party membership</td>
<td>-0.517*</td>
<td>-0.475†</td>
</tr>
<tr>
<td></td>
<td>(0.289)</td>
<td>(0.277)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.041***</td>
<td>-0.042***</td>
</tr>
<tr>
<td></td>
<td>(0.010)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>Sex</td>
<td>0.067</td>
<td>-0.056</td>
</tr>
<tr>
<td></td>
<td>(0.173)</td>
<td>(0.189)</td>
</tr>
<tr>
<td>Ever sent-down (yes=1)</td>
<td>-</td>
<td>0.506*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.234)</td>
</tr>
<tr>
<td>1993 job satisfaction</td>
<td>-</td>
<td>-0.959***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.151)</td>
</tr>
<tr>
<td>1993 logged earnings</td>
<td>-</td>
<td>-0.311*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.128)</td>
</tr>
<tr>
<td>Province (Guangdong omitted)</td>
<td>-</td>
<td>0.250</td>
</tr>
<tr>
<td>Hu’nan</td>
<td></td>
<td>(0.379)</td>
</tr>
<tr>
<td>He’nan</td>
<td>-</td>
<td>0.270</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.384)</td>
</tr>
<tr>
<td>Tianjin</td>
<td>-</td>
<td>-0.203</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.385)</td>
</tr>
<tr>
<td>Jilin</td>
<td>-</td>
<td>-0.029</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.374)</td>
</tr>
<tr>
<td>Shaanxi</td>
<td>-</td>
<td>0.131</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.373)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.932</td>
<td>5.211***</td>
</tr>
<tr>
<td></td>
<td>(0.551)</td>
<td>(1.178)</td>
</tr>
<tr>
<td>Pseudo $R^2$</td>
<td>0.041</td>
<td>0.109</td>
</tr>
<tr>
<td>Wald $\chi^2$</td>
<td>48.66</td>
<td>107.08</td>
</tr>
<tr>
<td>Degree of freedom</td>
<td>4</td>
<td>12</td>
</tr>
</tbody>
</table>

Notes: the data are weighted. Figures in parentheses are standard errors.

*** $p<.001$ ** $p<.01$ * $p<.05$ † $p<.10$. 

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Early Birds vs. Stayers &amp; Later Entrants</td>
<td>Later Entrants vs. Stayers</td>
</tr>
<tr>
<td>Years of schooling</td>
<td>-0.116***</td>
<td>-0.030</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.037)</td>
</tr>
<tr>
<td>Party membership</td>
<td>-1.533***</td>
<td>-0.206</td>
</tr>
<tr>
<td></td>
<td>(0.327)</td>
<td>(0.314)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.291***</td>
<td>-0.229*</td>
</tr>
<tr>
<td></td>
<td>(0.075)</td>
<td>(0.092)</td>
</tr>
<tr>
<td>Age²</td>
<td>0.003**</td>
<td>0.002*</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Sex</td>
<td>0.298</td>
<td>-0.104</td>
</tr>
<tr>
<td></td>
<td>(0.196)</td>
<td>(0.235)</td>
</tr>
<tr>
<td>Market sector in 1985 (yes=1)</td>
<td>3.699***</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(0.375)</td>
<td></td>
</tr>
<tr>
<td>1993 job satisfaction</td>
<td>-</td>
<td>-1.162***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.191)</td>
</tr>
<tr>
<td>Layoff experience since 1993 (yes=1)</td>
<td>-</td>
<td>3.155***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.270)</td>
</tr>
<tr>
<td>Province (Guangdong omitted)</td>
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<td></td>
</tr>
<tr>
<td>Hu’nan</td>
<td>-1.180**</td>
<td>-0.312</td>
</tr>
<tr>
<td></td>
<td>(0.351)</td>
<td>(0.445)</td>
</tr>
<tr>
<td>He’nan</td>
<td>-0.344</td>
<td>0.781†</td>
</tr>
<tr>
<td></td>
<td>(0.336)</td>
<td>(0.449)</td>
</tr>
<tr>
<td>Tianjin</td>
<td>-0.509</td>
<td>0.644</td>
</tr>
<tr>
<td></td>
<td>(0.351)</td>
<td>(0.449)</td>
</tr>
<tr>
<td>Jilin</td>
<td>-0.131</td>
<td>0.590</td>
</tr>
<tr>
<td></td>
<td>(0.304)</td>
<td>(0.415)</td>
</tr>
<tr>
<td>Shaanxi</td>
<td>0.039</td>
<td>0.423</td>
</tr>
<tr>
<td></td>
<td>(0.293)</td>
<td>(0.414)</td>
</tr>
<tr>
<td>Constant</td>
<td>6.503</td>
<td>5.922**</td>
</tr>
<tr>
<td></td>
<td>(1.585)</td>
<td>(2.105)</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.249</td>
<td>0.318</td>
</tr>
<tr>
<td>Wald χ²</td>
<td>155.07</td>
<td>188.25</td>
</tr>
<tr>
<td>Degree of freedom</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

Notes: the data are weighted. Figures in parentheses are standard errors.

*** p<.001 ** p<.01 * p<.05 † p<.10
Figure 1. Flow Chart of Labor Market Transitions in China, 1993 - 2000.

Notes: workers not active in 1993 who entered in the labor force between 1993 and 2000 are not included in the analysis of the late transition from the state sector to the market sector.
Figure 2. Selected Cities in the 2000 Urban Social Change Survey
Figure 3a. Histogram of the Estimated Propensity Scores for Early Birds (Treatment Group) and Stayers /Later Entrants (Control Group)
Figure 5. Histogram of the Estimated Propensity Score for Later Entrants (Treatment Group) and Stayers (Control Group)
Figure 4a. Market Treatment Effects on Earnings by Propensity Strata: Later Entrants Vs. Stayers

Notes:

a. Numbers in the scatterplot are $t$ values for earnings comparison between late entrants (treatment group) and stayers (control group). A $t$ value less than 1.96 indicates that there is no significant difference in earnings between the treatment and control groups within a propensity score stratum.

b. The linear plot is based on the hierarchical linear model (HLM) estimates (level-2 model with slopes from level-1 model as outcomes regressed on propensity stratum rank). The effect of the propensity stratum rank is statistically insignificant ($t$=0.17).
Figure 4b. Market Treatment Effect on Earnings by Propensity Strata: Later Entrants Vs. Stayers

Notes:

c. Numbers in the scatterplot are $t$ values for earnings comparison between later entrants (treatment group) and stayers (control group). A $t$ value less than 1.96 indicates that there is no significant difference in earnings between the treatment and control groups within a propensity score stratum.

d. The linear plot is based on the hierarchical linear model (HLM) estimates (level-2 model with slopes from level-1 model as outcomes regressed on propensity stratum rank). The effect of the propensity stratum rank is statistically significant ($t=-2.72$).
Figure 5. The Composition of Two Types of Later Entrants by Propensity Score Strata
Figure 6. Earnings and Returns to Schooling among Workers in the State Sector and in the Market Sector at Different Disaggregated Levels

Notes:
1. OLS regression of logged monthly income in 2000 (Y) on Years of schooling, Age and Age$^2$, Gender, Party member, logged monthly income in 1993, and Sector/worker type. The mean Y (in RMB Yuan) by sector/worker type is adjusted based on an additive model; returns to schooling are based on a model with interaction term(s) between sector/worker type and schooling.

2. The highlighted groups (with bold frames) enjoy significantly high earnings and returns to schooling than workers in the state sector, namely, stayers ($p<.05$).
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