SCHOOL EXPANSION AND EDUCATIONAL STRATIFICATION IN CHINA, 1981-2006

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ABSTRACT

This study examines the trends in educational stratification during China's economic reform period from 1981 to 2006. By using the panel data from the "China Health and Nutrition Survey", it matches school-age children to their parents' background information and investigates whether and how the effects of family background on children's educational transitions change across time and across the urban-rural residential status. Results show that educational inequality in access to senior high school has firstly increased then decreased, whereas inequality in access to college education has recently been strengthened and the effects of most social background variables on transition to college have shifted up. Results also show that, in spite of a recent quick expansion of college opportunities, accessing to higher education have become much easier for urban children but more difficult for children from low-income rural families, which thus leads to a relatively decrease in the mobility chance for rural children via higher education.

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INTRODUCTION

Throughout the twentieth century, many counties, particularly those industrialized ones, have experienced an increase in their populations' mean educational attainments (Shavit and Blossfeld 1993; Muller and Karle 1993; Kerckhoff 1995, 2001). Such a general expansion in the school system, however, does not have intrinsic implications on the change in educational inequality. This is because the allocation and the distribution of schooling are conceptually independent, and may change in response to distinctive demographic and behavioral changes (Mare 1981: p. 73; see also Featherman and Hauser 1976; Mare 1991; Mare and Maralani 2006). In assessing whether the increase in educational availability is associated with increased equality of educational opportunities, many studies extensively focus on the cross-cohort trend in the relationship between social origin and educational attainment, leading to a rich literature of comparative stratification research on education (for a recent review, see Breen and Jonsson 2005).

The basic finding of cross-country comparisons is remarkable: school expansion has little impact on the role played by family background on children's educational attainment. In spite of the upgrading of educational systems and increase in the level of industrialization, educational inequalities have not diminished but remained persistent since the early 20th century (e.g., Shavit and Blossfeld 1993). This has happened in industrial societies like Germany (Becker 2003; Hillmert and Jacob 2003; Sieben et al. 2001), France (Garnier and Raffalovich 1984; Vallet 2004); Italy (Cobalti 1990; Cobalti and Schizzerotto 1993; Shavit and Westerbeek 1998), England (Halsey 1975; Halsey, Heath and Ridge 1980), the United States (Featherman and Hauser 1978; Mare 1981, 1993; Hout, Raftery and Bell 1993; Hout and Dohan 1996; Gamoran 2001), Ireland (Raftery and Hout 1993) and Spain (Valverde and Vila 2003), among others (Shavit and Blossfeld 1993; Ishida et al. 1995). Exceptions are only The Netherlands (De Graaf and Ganzeboom 1993; De Graaf et al. 2000; De Graaf 1986;

Need and de Jong 2001; Sieben et al. 2001), Sweden (Erikson and Jonsson 1996a; Jonsson, Mills and Muller 1996), and Norway (Lindbekk 1998), in which social origin differentials in educational attainment are reported to decline over several decades. Even among these exceptions, nonetheless, the equalization of educational opportunities could not be attributable to educational expansions (Shavit and Westerbeek 1998: p. 33).

The pattern of "persistent inequality" in the context of educational reforms has been found not only in the industrial societies above, but also in some socialist counties such as Poland and Hungry (see Shavit and Blossfeld 1993; Simkus and Andorka1982). This is not a general pattern across socialist societies, however; in other cases, educational inequalities at certain levels have increased rather than persistent. For example, in Soviet Russia, Gerber and Hout (1995) find a mixed pattern with the origin-education association declining at secondary education but strengthening in access to university. In a later paper, Gerber (2000b) finds that in post-Soviet Russia the linkage between social origin and educational achievement has even increased, especially in access to academic secondary schools. In Belarus and Baltic countries, although it is not a cross-cohort comparison, Saar's (1997) study of transitions to the tertiary level education shows that while social origin effects on secondary school tracking were strong, social origin presents still stronger direct effects predicting the probability of transition to university (Table 6), a finding consistent with Gerber and Hout (1995). In China, again, by using an urban sample, Zhou, Moen and Tuma (1998: Table 3) report that compared to the Mao period, the effects of family class background on both secondary and tertiary level educational transitions have been increased after the economic reform. This result is further supported by several recent studies on urban China's educational attainment (Li 2004; Liu 2005).

Overall, the persistent inequality widely observed in most industrial countries and the increased inequality found at certain levels in some socialist/post-socialist regimes contradict the notion that educational expansion, or more generally, industrialization, would loosen the linkage between parental status and educational attainment (Lipset

and Bendix 1959; Treiman 1970; Treiman and Yip 1987). Rather, they tend to suggest that social origin differentials are reproduced or strengthened in terms of educational attainment (see also Breen and Whelan 1993; Whelan and Layte 2003; Breen and Goldthrope 2001). How does such a reproduction process of the origin-education relationship widely happen throughout the world?

One notable hypothesis to summarize the persistence of educational inequalities is the *maximally maintained inequality* (MMI) model (Raftery and Hout 1993). Based on the Irish and British experience, MMI posits that social origin differentials would only begin to decline when the participation rates of advantageous groups at a given level are maximally maintained, or in other words, have reached saturation; otherwise, increase in the transition rates would occur in such a way that all the origin-specific transitions preserve the previous origin-specific relationships[1]. While this model mainly addresses quantitative social origin differentials, it is further extended to an *effectively maintained inequality* (EMI) hypothesis (Lucas 2001). The EMI model maintains that advantaged socioeconomic groups tend to reproduce advantages whenever advantages are commonly possible – if quantitative differences are common, they will obtain quantitative advantage; likewise, if qualitative differences are common, they then shift their advantages to qualitatively better qualifications. In this regard, both MMI and EMI are to suggest a social reproduction trend of class differences in education, that whatever the reasons are, those in positions of power and privilege continue to maintain or even increase their advantages (Goldthrope 1985; Breen and Goldthrope 2001).

While MMI and EMI are good at summarizing the existing findings, they are weak in explaining them. Recent progress in the field has resulted in a resurgence of rational choice models focusing on educational decision-making process (Becker 2003; Breen and Goldthorpe 1997; Erikson & Jonsson 1996; Esser 1999, cited in

[1] MMI also hypothesizes that equalization can be reversed if the supply of education at a certain level is widespread among disadvantageous groups whereas the supply of education at the next level remains stable. For details, see Raftery and Hout 1993; Gerber and Hout 1995.

Becker 2003; Goldthorpe 1996; for an earlier version, see Boudon 1974; for a recent review, see Breen and Jonsson 2005). For instance, Breen and Goldthrope's (1997) rational choice model formulates three mechanisms to explain the class differentials in education: 1) "relative risk aversion", i.e. people try to avoid downward mobility; 2) class differences in the average ability level and thus the subjective expectation of educational success (see also Esser 1999; Becker 2003; Hillmert and Jacob 2003; Pisati 1995); 3) class differences in resources (see also Pisati 1995). Based on this model, they argue that the persistence of class differentials is due to the uniform decline of educational costs among classes (for example, education at some level is made free); that is, the cost and benefits evaluated by parents are relatively constant across class-origins (see also Goldthorpe 1996). Empirical tests of these proposed mechanisms are positive in explaining class differentials in the participation of tertiary education in The Netherlands (Need and de Long 2001), but to a much lesser extent in West Germany (Becker 2003).

Whereas the mechanisms suggested by the rational choice model are insightful in predicting the persistent and declining trends in educational inequalities (Breen and Goldthorpe 1997: p. 295), they seldom discuss the cases of increased educational inequality represented by some socialist/post-socialist societies like Russia and China in specific historical periods, which are also unexpected by MMI[2]. Yet, the rational choice mechanisms may still work for socialist/post-socialist educational stratification, because if the schooling cost is increased rather than decreased at certain levels in these societies, the observed increased inequality pattern would not be surprising. In addition, as many studies have already indicated (e.g., Bian 1994; Bian and Logon 1996; Walder 1986, 1992, 1995; Walder et al. 2000; Zhou and Hou 1996; Zhou et al. 1996, 1997; Zhou 2000, 2001), the allocation of resources and opportunities are regulated by state policies and state intervention in these societies. As a result, people's relative risk aversion strategy and their possession of resources may be much

[2] As footnote 1 indicates, MMI also predicts a reversed equalization trend when supply at one particular level is overwhelming, but this seems to be not the main focus of the thesis.

influenced by the state, which may lead to a different educational stratification process from most industrial capitalist societies.

In this regard, China will be a particularly interesting research site for comparative educational stratification research, not only because China has never been systematically integrated in cross-country comparisons of educational inequality despite that educational expansion also happens in China (e.g., Hannum 2007; Hannum and Xie 1994; Lavely et al. 1990; Zhou, Moen and Tuma 1998)[3], but also because as a post-socialist society, the state still plays an important role in allocating opportunities and life chances, which makes China institutionally different from industrial capitalist societies (e.g., Wu 2006; Wu and Treiman 2004, 2007). In the mean time, educational cost could be increased in some historical periods in China (Li 2004; Liu 2006a), which then might imply that the educational stratification mechanisms differ from the general persistent inequality pattern in the West.

In this paper, we study the educational stratification patterns in China's reform period from 1981 to 2006. Based on the panel data from the "China Health and Nutrition Survey", we focus on the across-cohort comparison of educational attainments both in the Chinese urban and rural areas. Our particular interest is to see whether and how educational inequalities change over time, and based on what we find from the China experience, whether there are implications for an integration of the existing theoretical accounts of MMI and EMI, and more basically, for the rational choice theory and social reproduction theory in education.

In the section that follows, we will first provide the historical background on economic reforms and school expansion in China since the 1980s, with a particular note on the urban-rural gap in educational attainment. We then demonstrate how

[3] Although there are several comparative studies on educational attainment in China (e.g., Zhou, Moen and Tuma 1998; Li 2004; Hannum 2007), they either concentrate only on the case of urban China or do not follow the widely used research design in the field (Shavit and Blossfeld 1993), or both. The later is represented as not employing the standard class measurement and cross-cohort comparison.

family socioeconomic background has affected children's educational outcomes in the context of economic marketization and school expansion. Finally, we discuss the implications of the change in the educational inequality structure in reform-era China.

ECONOMIC REFORMS AND SCHOOL EXPANSION IN CHINA

Few nations have undergone changes as dramatic as China has since the late1970s. China's GDP per capita has consistently grown from 379 RMB yuan in 1978 to 14,040 RMB yuan in 2005 (see Column A of Table 1). At a fixed price in 1978, the per capita GDP increased by 5.8 times in 2000 and 8.8 times in 2005, with an annual growth of about 9 percent (National Bureau of Statistics 2006). Accompanied with China's economic miracle was a rapid growth of inequality. As Column C of Table 1 shows, the Gini coefficient, a common measure of income inequality, increased from 0.317 in 1978 to 0.449 in 2005 for the nation as a whole. Income inequality between urban and rural population, institutionalized by the household registration (*hukou*) system (Wu and Treiman 2004, 2007), was particularly prominent: the urban-rural ratio of income per capita declined slightly in the early 1980s, but has increased dramatically since then, from 2.5 in 1990 to 3.1 in 2000 and 3.2 in 2005 (Table 1: Column D). What's more, a study shows that urban-rural income inequality has contributed 43 percent to overall income inequality in China (Cai and Wan 2006: p. 3).

[TABLE 1 ABOUT HERE]

Economic reforms affected educational stratification in several respects. First, sustainable economic growth expands the demand in skilled labor, which has led to an overall increase in returns to education (Nee 1989, 1996; Nee and Mathews 1996; Cao and Nee 2000; Liu 2006a), although this increase has been differentiated among sectors (Bian and Logan 1996; Wu 2002; Wu and Xie 2003; Xie and Wu 2005; Zhou 2000; Liu 2006a, 2006b), regions (Xie and Hannum 1996; Hao and Li 2006), classes (Liu 2006a, 2006b), and historical periods (Wu and Xie 2003; Xie and Wu 2005; Liu 2006a, 2006b). Particularly, income return to education in 1988 was around 3 percent, and slowly increased to around 4 percent in 1996 and to around 5 percent in 2000. Yet,

after 2000, the return to education quickly jumped to about 10 percent in 2003 (Liu 2006a). Across sectors, whereas in 1996 working in public, private, and marginal sectors generated income returns to be about 4 percent, 6 percent and 8 percent respectively, in 2003 these figures changed to be about 9 percent, 8 percent and 3 percent (Liu 2006b). Findings as such show that education has been an increasingly important factor for socioeconomic attainments in reform-era China, which then creates incentives for continuing schooling.

Second, economic growth affords more resources for educational development and school expansion. The government budgetary expenditure on education has been increased dramatically (see Table 2), from 113.19 million in 1980 to 4465.86 million in 2004. In 1980, the Chinese government set the target of universalizing primary education by the end of the 1980 and the implementation of nine-year compulsory education in the 1990s (Tsui 1997). With the increase in educational resources, these goals were largely attained by 1998.

[TABLE 2 ABOUT HERE]

Table 2 also summarizes the national statistics on the expansion of educational opportunities in China since 1978. As indicated in this table, the overall enrollment rate had reached over 98% in the 1990s. The progression rate to junior high school, given the completion of primary school education, was over 90% by the mid-1990s, and reached almost 100% in 2003. In contrast, the progression rate to senior high school given the completion of junior high school experienced a contraction period since mid-1970s to 1992, remained almost constant by 1998, and then increased relatively quickly since 1999. Yet, even in 2003, the progression rate at this level was less than 40%. Higher education has also been increasingly opened up. Early since 1985, the transition rate from senior high school to college was larger than that from junior high school to senior high school. More strikingly, since 1999 the progression rate to college given the completion of senior high school increased considerably fast, from 43.1% in 1998 to 83.4% in 2003. This rapid expansion in higher education is due to the new educational policy launched in 1999. According to the official claim, such a speedy growth in the college opportunities is to make higher education widely

spread to the whole population (Liu 2005; Min 2007).

[Figure1 ABOUT HERE]

The school expansion in the secondary and higher education since 1999 has made several changes. First, whereas both the transition rates to senior high school and to college increased, the increase was much rapider for the higher education. In 2003, for example, the rate of entering senior high school upon the completion of junior high school was 38%, but in the same year the rate of entering college upon completion of senior high school was strikingly 83%. The "38%" versus "83%" structure in the educational transitions strongly reveals that there is a bottleneck in the education system in China, that is, once children successfully progress to senior high school, their chance of being admitted to college is very high. This bottleneck structure since the 1999 educational reform, then, is a result of two aspects: on the one hand, the transition rate of going to junior high school is so high that junior high school provides an increasing and nearly saturated supply of graduates (as reflected in Cloumn 4, Table 2) whereas the senior high school only experiences a moderate increase in its quota of admission, resulting relatively small transition rates from junior high school to senior high school (slightly more than one third); on the other hand, once children successfully pass the selection at the senior high school level, they face the wide supply of college education. Such a bottleneck structure in the education system is seldom observed in other countries, except for Soviet Russia[4].

Second, as one purpose of the 1999 educational policy is to "marketize education" (Liu 2005), college education since 1999 was not free of charge. Before 1999, higher education in China was mainly funded by the government and families need to pay little for it. After 1999, however, the fees that college students have to afford increased dramatically. A recent figure shows that the average fees for college

[4] However, the bottleneck in the Soviet Russia education system is at the college level rather at the senior high school level. That is, the supply of secondary education was increasingly huge whereas the supply of college education remained stable. Therefore, strictly speaking, these two bottleneck structures are not the same.

education have accounted for over 70% of the mean annual household income in Western areas (Liu and Yang 2007: p. 125).

These changes provide important implications for the urban-rural divide in educational attainment. Although there is no doubt that the central government intended to promote educational opportunities for all its citizens, economic reforms in rural areas slowed down to a certain extent and yielded a negative impact on school enrollments. On the one hand, the household responsibility system implemented in rural China since 1978 drove rural children out of school for agriculture labor and employment in the rural industry. On the other hand, the fiscal reform in education in the mid-1980s exacerbated the situation (Hannum 2007). In 1985 the Decision on the Reform of the Education Structure (hereafter the 1985 Decision) was launched, followed by the 1986 Compulsory Education Law. The foundation of these educational policies was a shift of financial responsibilities of funding primary and secondary education from the central government to local levels (Cheng 1994). Local governments were then given the responsibility for raising and spending educational revenue. In practice, provincial governments took on the provision of higher education, and transferred the responsibility for the financing of compulsory education to lower levels of government. Hence, to accommodate the increasing number of enrollments and increasing educational costs, schools have been allowed to charge tuition and other fees, even for nine-year compulsory education. For example, in 1999, the surcharges and miscellaneous fees together accounted for 62% of all out-of-budgeted revenue for primary schools and 57% of that for lower-secondary schools (Tsang and Ding 2005: Table 5). Recent surveys conducted by some sociologists in selected rural counties revealed that Chinese farmers with an annual per capita net income of 3,200 yuan in 2005 had to pay about 800 yuan a year for a child's education in primary and lower secondary education. Excessive charges by schools have become a major reason behind the increasing rural school dropouts in recent years (Liu and Yang 2007). In 2004, the rural average dropout ratios for primary and junior high schools were 2.45% and 3.91% respectively.

Schools charged even higher for schooling beyond the compulsory levels. A

recent survey report shows that many families went into poverty because of affording their children's tuitions and other fares in senior high school and college. The proportion of rural families found "difficult" or "very difficult" to provide these fees was at least over 39% (Liu and Yang 2007: p.125). Economic considerations thereby significantly affect the decision to continue schooling (Min and Wang 2006), especially in rural areas.

As a result, affordability of educational costs becomes one main reason why rural children are lagged behind their urban counterparts in educational access, especially that to senior high school and college, among others (such as educational aspiration of rural children, the school quality in rural areas, etc., see Liu and Yang 2007). There is also a reported decline in the number of student enrollments from disadvantaged family background at several elite universities (Liu 2004: Table 2; Min and Wang 2006; Yang 2006).

Although the preceding discussion might be impressive to sense the urban-rural gap in educational attainment in reforming China, national statistics on such an urban-rural disparity has never been available thus far. A most recent study by Hannum (2007) investigates evidence about the urban-rural differentials in access to compulsive education. Unlike her focus, in this paper we mainly examine how the increased educational opportunities at post-lower-secondary levels are distributed among different socioeconomic groups and whether such allocation varies across cohorts and across the urban-rural residential status. Particularly, we examine such educational stratification processes in the context of rapid growth in economy and inequality in contemporary China.

EDUCATIONAL ATTAINMENT, SOCIAL MOBILITY AND SOCIAL REPRODUCTION IN REFORMING CHINA: HYPOTHESES

The role of education in mediating the link between origin and destination has been the central concern in social stratification research (e.g., Blau and Duncan 1967; Featherman and Hauser 1978; Ishida et al. 1995; Deng and Treiman 1997; Erikson and Goldthorpe 1992; Gerber and Hout 2004; Titma, Tuma and Roosma 2003; Breen

and Goldthrope 2001; Gamier and Hout 1976). In the origin-education-destination associations, education plays both as an avenue of social mobility and as a tool for social reproduction (Hallinan 2001). On the one hand, formal schooling can help children from disadvantaged backgrounds to change their fate; on the other hand, the schooling that individuals have received also depends on the advantages/disadvantages that their parents confer on them throughout childhood (Ishida et al. 1995). In the course of industrialization, the "liberal thesis of industrialization" (Lipset and Bendix 1959; Treiman 1970; Treiman and Yip 1987) and the "increase merit selection" hypothesis (Jonsson 1993) have been proposed so as to predict such a trend in modern societies that access to education would be decreasingly linked with social origins and class positions are increasingly determined by educational attainment. These hypotheses, however, received little support from empirical tests (Erikson and Goldthorpe 1992; Breen and Goldthrope 2001). In Ireland where industrialization started from early 1970s, researchers find that while the service class increased their advantages in attaining educational qualifications, the impact of education on class destinations is diminishing (Breen and Whelan 1993; Whelan and Layte 2003). A similar pattern is found in Britain (Breen and Goldthrope 2001), where relative social mobility chances changed little across two cohorts and the effects of individual merit, as measured by ability and education, on individuals' relative mobility chances declined. This has led scholars towards a conclusion of social reproduction that even in several modern industrial societies, not only the origin-destination relationship is reproduced (Erikson and Goldthorpe 1992; see also the review by Breen and Jonsson 2005), but also how education mediates such a relationship is reproduced (Ishida et al. 1995).

The systematic differences in the institutional arrangement of property rights from modern capitalist economies have made socialist societies especially worthy for comparative stratification research. During the past several decades, the transition of socialist regimes to market-oriented economies occurred in countries like China and Soviet Russia has generated a large market transition debate over whether the role of education is increasingly significant in opportunity allocation and resource

distribution, and whether the power of redistributive bureaucracy declines its significance (e.g., Nee 1989; see the review by Wu 2002, 2006; Wu and Xie 2003; Walder 2002; Szelenyi and Kastello 1996; Nee and Matthews 1996). One stylized finding from the debate is that while the market indeed creates new opportunity structures for those with human capital, those who formerly possess power and advantages do not necessarily encounter a decline in their status; rather, they can retain or even increase their advantages during the transition period through means of "power conversion", social networks, or others (Bian and Logan 1996; Zhou 2000; Wlader 2002, 2003; Rona-Tas 1994; Gerber 2000a, 2001; Gerber and Hout 1998, 2004). In China, one reason for such an intragenerational reproduction of advantages during the economic transition is the continued importance of the role of state in launching the reform and in regulating individual life chances (Bian and Logon 1996; Zhou 2000).

In this regard, educational attainment, social mobility and social reproduction can be combined processes during the economic transition in China. On the one hand, the significance of education for socioeconomic attainment has increasingly grown partly because of the emerged new opportunity structure brought by the market[5]; on the other hand, those who reproduced their advantages in the reform may realize the uplifted importance of education and compete for advantages in this area so as to pass their advantages to their offspring.

In addition, the strategies that the advantaged groups use for social reproduction and when to use may differ across historical periods. As Wu and Xie (2003) show, the timing of entry into the market has implications for who gets ahead in the reform. Therefore, in different periods the advantaged may use different strategies to transmit

[5] This may be a temporal statement because as previous studies indicate (Zhou et al. 1996; Walder 1995; Walder et al. 2000; Wu and Xie 2003), education is also an important mobility regime in pre-reform and early-reform periods. In addition, this statement only holds for income returns to education (Liu 2006a, 2006b), as we have discussed; whether it can be applicable to educational returns of class destination is still unknown.

their advantages to their children.

Specifically, in early reform periods (say, before 1992), Figure 1 (solid lines) indicates that the transition rates actually experienced a quick increase at the junior high school level, a slow decline at the senior high school level, and a relatively small increase at the college level. The educational contraction rather than expansion at the senior high level is rarely observed in other societies, except for post-Soviet Russia (Gerber 2000b). Gerber's study shows that education contraction increased the inequality in accessing to academic secondary schools. Therefore we might expect this also happened in China when compared to origin-based differentials in pre-reform periods[6]. In this period, higher education was fully funded by the government and free of charge. The transition rates to higher education given completion of senior high school were only moderate. We treat this period as a starting point of comparison.

In the middle reform period (say, from 1993 to 1998), whereas the transition rate to junior high school increased to over 90%, that to senior high school remained almost stable. In contrast, transition rate to college level education experienced a moderately large increase. Like educational contraction at this level before 1992, the stability of educational transition to senior high school is also not commonly found. Thus, whereas educational expansion in most modern industrial societies predicts persistent or declined inequality, we expect contraction and stability in the school system to undergo increased inequality at the senior high school level. At the same time, education at the college level was still costless for students from all social origins, therefore, following Breen and Goldthrope's (1997) rational choice model, when there is a uniform decline of the schooling cost, educational inequality may change little. However, based on the experience from Soviet Russia (Gerber and Hout 1995), we may also expect inequality at this level to be increased [need more words]. In sum, compared to the early reform period, educational inequalities are expected to be increased at the senior high school level, and persistent or increased (though less

6 Although this is a very interesting topic, it is not the focus of this paper.

unclear) at the college level.

In the late reform period (say, from 1999 to 2006), Figure 1 shows that the transition rate to junior high school almost reached saturation. However, as we have discussed in the previous section, increases in the transition rates to senior high school and college had created a bottleneck structure in the education system beyond junior high school. Moreover, schooling cost was increased at the college level. Therefore, we clearly predict a boost in educational inequalities for transition to tertiary education. At the senior high school level, as the transition rates increased comparatively faster than previous periods, we may expect inequality to be persistent or declined at this level, based on the literature on modern industrial societies; however, following Gerber's study, we may also expect an increase in the quantity of inequity at this level.

Overall, across periods we unambiguously predict that educational inequality at the senior high school level would increase in the middle reform period (1993-1998), and that at college level would increase in the late reform period (1999-2006). We are less confident at this point, however, on the signs of the change in the social origin differentials for transition to senior high school in the late reform period (1999-2006), and those for transition to college education in the middle reform period (1993-1998), as experiences from modern industrial societies and from socialist/post-socialist Russia have different predictions.

In our view, our two explicit expectations may suggest that the advantaged are in different steps to secure their advantages in educational attainment. In the middle reform period when higher education was still costless, their main focus is on senior high school education; in the late reform period when higher education quickly expanded, they shifted their advantages from the senior high school level education to college education. In this light, although we still need empirical results on the two unclearly formulated inequality trends, we implicitly follow the EMI predictions: whenever and whatever quantitative differences or qualitative differences are important and commonly possible, the advantaged would shift their advantages to these qualifications, either in quantity or in quality.

Another focus of this paper is the urban-rural disparities in educational attainment beyond compulsory levels. In Ishida et al. (1995), one important distinction to make for social reproduction mechanisms is to separate exclusion with inclusion. These two processes may help capture the educational inequality trends across the urban-rural residential status. According to Wu and Treiman (2004, 2007), whereas the Chinese household registration (*hukou*) system had institutionally regulated the urban and rural population, it provided a mobility channel for children from rural families: by gaining admission to a specialized secondary school and more importantly by gaining admission to senior high school and then to tertiary education, rural children could escape from their rural *hukou* status. In this way, when migration was strictly controlled, the urban society tends to selectively include the "best and brightest of the rural population" (Wu and Treiman 2007: p. XX), but exclude those who were selected out. How is this selection mechanism affected by the expansion in educational opportunities at tertiary level, especially in the late reform period (1999-2006)?

In our assessment, following our comprehensible expectation that increased inequality of access to tertiary education would happen in the late reform period, we expect that the selection mechanism may be more or less hurt by the bottleneck structure only recently apparent in the school system. One reason for this is the increased schooling cost at college level [is this the main reason?]. As we mentioned in the previous section, while before 1999 higher education was costless, after the recent educational reform families have to pay for the tuition and other fares. This would make large economic difficulty for rural families to afford their children's higher education, especially for those low-income rural families. Following Esser's (1999) conceptualization of investment risk as educational cost divided by the subjective probability of successful completion of the educational choice[7], we expect

[7] Esser's theory suggests that class-specific differences in educational motivation, as captured by benefits and probability of status decline, and investment risk, as captured by educational cost divided by the subjective probability of successful completion of the educational choice, are the

the investment risk to be increased especially for rural poor families. And because of this, we clearly expect that the rural-to-urban selection mechanism would be more or less hampered especially for those low-income families.

In the following analysis, we test the thesis of change in the class differentials and the thesis of change in the rural-to-urban selection mechanism by using a panel data.

DATA, VARIABLES AND METHODS

Data

The data to be used in this study is drawn from the 1989 through 2006 waves (7 waves in total) of the China Health and Nutrition Survey (CHNS), which followed a panel data design and was conducted by the Chinese Academy of Preventive Medicine and the Institute of Nutrition and Food Hygiene, in collaboration with the Carolina Population Center at the University of North Carolina. The CHNS used a multistage random sampling procedure to get a representative sample from eight geographically diverse provinces that differ by level of economic development, public resources and health indicators. The provinces covered were Liaoning, Jiangsu, Shandong, Henan, Hubei, Hunan, Guangxi and Guizhou in 1989. Liaoning was replaced by Heilongjiang in 1997; thereafter both provinces were included in the sample. Replacement households and communities were added to the sample in some survey years. Counties in each of these eight provinces were stratified by income level and randomly selected based on a weighted sampling scheme. In addition, the provincial capital and a lower income city were selected. Villages and townships within the counties and urban and suburban neighborhoods within the cities were selected randomly.[8]

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main mechanisms of class differentials in educational choice. For a detailed description of Esser's model, see Berker 2003: p. 3-4.

[8] For detailed description of the additions and replacements and the sampling procedures, see http://www.cpc.unc.edu/projects/china/design/. The data and related descriptive documents can be downloaded from that website also.

One advantage of this data is its detailed information on education. In each sampled household, respondents were asked what type of education they had and in what grade they stayed at the time of each survey. Respondents were also asked to give such information of the other persons belonging to their households. Besides, the surveys have gathered extensive information on family social background, especially on household income.

Since our main concern is the beyond compulsory level education, we focus only on the young cohorts who were born from 1969 to 1994. In the Chinese school system, the typical age for entering junior high school, senior high school and college is 12 to 13, 15 to 16, and 18 to 20, respectively. As a result, those who were born in 1969 could still be at the risk of transition to college when the CHNS first wave was conducted in 1989 (age 20), and entered the risk set of junior school transition in 1981 (when aged 12); likewise, those who were born in 1994 might be just in time to enter junior high school in the year 2006 (age 12) when the most recent wave (2006) is available.

We use individual level data in this study by converting the longitudinal data format into individual wide format. We extract individuals born from 1969 to 1994, and then match them with their parents, based on the variable indicating the relationship of the respondent to the household head. As a result, children-parent records, as well as household records on annual income, parental education and occupation, residential status, household registration (*hukou*) status, father's education and occupation, gender, etc., were all obtained. This has yielded a sample of 6,322 cases.

Variables

The dependent variable is the transition status of the young cohorts at certain levels, which is coded as a dummy variable. Following the standard research design in the literature (e.g., Mare 1981; Gerber and Hout 1995), we examine the determinants of the transition rate at five specific levels, from primary to junior high school, completion of junior high school, from junior high school to senior high school,

completion of senior high school, and from senior high school to college. However, given the facts that primary school education is almost saturated in both rural and urban China, and that junior high school is almost saturated since mid-1990s, we mainly concentrate on the determinations of the transition status at the higher secondary school level and the college level and make cross-cohort comparisons. Moreover, as the existing literature shows that the school tracks which students take affect their probabilities of making subsequent educational transitions (Breen and Jonsson 2000; Saar 1997; Lucas and Good 2001; Lucas 2001), we also study the track differences (academic vs. vocational) at the higher secondary level[9].

The main independent variables in the following analysis are family background, represented by parental education, father's class status ad annual household income. Parental education is a continuous variable measured by the highest years of schooling of the parents. Father's class status is a standard measure of social origin; hence, to make the China case internationally comparable (Shavit and Blossfeld 1993), we employ the EGP class schema commonly used in the literature to measure father's class status. Specifically, we code father's occupations into a 6-category version of the EGP scheme (Erikson, Goldthorpe, and Potocarero 1979; Ganzeboom et al. 1992; Ganzeboom and Treiman 1996). The relationship between the 10-category version

[9] In China, like in many other countries, there is a vocational track (vocational school, *zhongzhuan*) parallel to an academic track (senior high school, *gaozhong*) at the higher secondary level education. The major pathway to college education is the transition from senior high school to college. Although vocational school can also lead to college education, the proportion is quite small. According to several independent data sources (e.g., the 1996 Life History and Social Change Survey and the 2003 Chinese General Social Survey), the transition rate to college upon completion of vocational school is less than 7 percent. These statistics are available from the authors upon request.

proposed by Erikson et al. (1979) and the 6-category version used here is as follows[10]:

Original classification	New classification
I. Large proprietors, higher professionals and managers	6
II. Lower professionals and managers	6
III. Routine nonmanual workers	5
IVa. Small proprietors with employees	4
IVb. Small proprietors without employees	4
V. Lower grade technicians and manual supervisors	3
VI. Skilled manual workers	3
VIIa. Unskilled and semiskilled manual workers	2
IVc: Self-employed farmers	1
VIIb. (Unskilled) agricultural workers	1

Source: Wu and Treiman 2007: p. XX.

Annual household income is measured by the yearly household income from all sources. This variable is constructed by the investigators based on the extensive income information gathered by the CHNS, and is available only for the first 6 waves[11]. Following the same process we set up this variable for the 2006 wave.

Another important independent variable is whether or not the respondent lived in rural areas (rural=1). This residential status variable captures not only the effect of family background, but also the regional inequality that reflects the fundamental divide in the country (Wu and Treiman 2007). It also partly reflects the effect of *hukou* status, although not the same. As a control variable, sex (male=1) is included in our estimated models as well. Another important control variable in the literature is the number of siblings, as a family's available resources need to be distributed among all the children. While scholars have demonstrated that the number of siblings has a negative impact on educational attainment in western societies (e.g. Cameron and

[10] It should be noted that the CHNS does not have the information of detailed job coding of the respondents; therefore, the EGP categories used here is only a proxy of the standard procedure for creating the EGP schema.

[11] For description of how this variable is constructed, see the document on the CHNS official website: http://www.cpc.unc.edu/projects/china/

Heckman 1998; Mare and Chen 1986), the CHNS data only allows us to identify a child's relationship with the household head. And because of the Chinese one-child policy which has been strictly implemented since the early 1980s, the effect of sibling size was not considered in our analysis.

Because of the panel data design, all the independent variables are time-varying (except for sex). Specifically, we use the information from the nearest survey year before each transition to represent the family background that is available for children to make different educational transitions. One substantive critique on the educational transition literature argues that without time-varying covariates in the transition models we are implicitly making an assumption of "myopia" (Caremon and Heckman 1998); the CHNS panel data, however, does not suffer from this critique because we indeed have time-varying measures for family background.

Figure 1 compares the CHNS sample statistics with the national statistics on transition rates at each level. It indicates that the CHNS data more or less approximates the national statistics, especially at the college level. In results not reported here, a survey of to what extent different data sources represents the national statistics shows that the CHNS is among the closest[12].

Methods

As a comparative study, the main method we are going to use is the standard Mare model (1980, 1981), which models the effects of family background along sequential educational transitions. In specific, this model conceptualizes schooling as a sequence of transitions between grades, defining a continuation probability at each transition point, i.e. the chances that an individual will continue to a given level of schooling given completion of the immediately lower level.

This method, however, has been recently criticized in two ways. First, by

[12] These data sets include: the 1996 Life History and Social Change Survey, the 2003 and 2005 Chinese General Social Survey, and the 2000 0.01% Census data. This result is available upon request.

assuming unilinear sequential transitions, this model cannot detect the multiple branches at certain transition levels that might have path dependence and tracking effects. Concern in this respect has led an extension of this model to a multinomial transition model (Breen and Jonsson 2000). Second, according to Caremon and Heckman (1998), without including time-varying covariates in the estimation, which is a usual case in the existing educational transition literature, this model implicitly assumes myopia that parents and students make decisions only base on resources available at one time point. In addition, in the absence of time-varying covariates, this model cannot be even parametrically identified and its coefficients can be determined by the distribution of unobserved heterogeneity. Lucas' (2001) defense of the Mare model thus maintains even if myopia is an unfavorable assumption, inclusion of time-varying variables in the model can solve the model identification problem (but not the unobserved heterogeneity).

Since we have time-varying measures for each educational transition, we do not suffer the main critiques by Cameron and Heckman (1998)[13]. As a consequence, we still use the Mare model when we study the sequential educational transitions so as to add China into the list of international comparison. By using a logit model to estimate the effects of social origin, among others, on the conditional transition probabilities, the Mare model takes the following form:

$$\log_e \left(\frac{p_{ij}}{1 - p_{ij}} \right) = \beta_{jo} + \sum_k \beta_{jk} x_{ijk}$$

where p_{ij} is the probability that the i-th individual will make the j-th transition, x_{ijk} is the value for the i-th individual deciding whether to make the j-th transition on the k-th independent variable, β_{jo} is the constant and β_{jk} denotes the effect of a unit change in x_k on the log-odds of grade progression.

As we also study the track differences between vocational and academic at the higher secondary level, we additionally employ Breen and Jonsson's multinomial

[13] However, since we do not have "ability" or "motivation" measures in the CHNS data, we may still have the omitted variable bias.

transition model (i.e. a multinomial logit model) when we do this (for a detailed description of this model, see Breen and Jonsson 2000: p. 761-63).

RESULTS

Descriptive Statistics

In a 9-nation comparison of the social selection processes in European school systems, Muller and Karle (1993) find that at each transition point some children drop out in a socially selective way. That is, as the cohort moves on, transition by transition, the social composition of the survivor group changes. This is also evident in China, as Table 3 indicates.

[TABLE 3 ABOUT HERE]

In Table 3, we present summary statistics for selected variables used in the analyses, by different historical periods when children make transitions (see the note for the conversion from birth cohorts to historical periods). Figures in panel A show that the compositions of parent education and family income for those who are at risk of making transitions (i.e. those who have already finished the immediate lower education and are ready for specific transitions) differ not only across cohorts, but also across transitions. For example, within each transition, the means of parental education and annual household income increase across historical periods as cohorts move on; across transitions, they are also increased, namely, the compositions of advantageous parental background become enlarged. Such a cross-transition change also happens to Father's EGP class composition.

Yet, rather than how social compositions are distributed across transitions, what we are more interested in is the distribution of transition rates by different social groups. Panel B presents the transition rates at each educational level by urban-rural residential status and by father's class status. Inspecting panel B, we find that despite the overall increase of the transition rates at all educational levels (as indicated by the first row), such an expansion is not homogeneously distributed by various social groups. Figure 2 plots the odds of urban vs. rural and managers/professionals (I, II) vs. agricultural workers (IVa, VIIb) in the transition rates across different historical

periods.

[Figure 2 ABOUT HERE]

According to Figure 2, educational differentials in the transition rates to junior high school decline across periods. The urban vs. rural odds are 1.063 in 1981-1992, but then decline to 1.025 in 1993-1998 and to 1.024 in 1999-2006. The class differentials follow a similar pattern: the odds of selected classes decrease from 1.10 to 1.06. This seems to support one specific prediction by MMI: social origin differentials would begin to decline when the transition rates of advantageous groups at a given level are maximally maintained (reflected by the transition rates to junior high school in panel B, Table 3).

Educational differentials in the transition rates to senior high school do not follow an easy pattern: both the urban vs. rural odds and the class odds indicate a first increasing and then declining trend. The urban vs. rural odds jump from 1.57 to 1.80, and then go down to 1.60. Class differentials are larger than the urban-rural differentials in transition rates at this level: the odds change from 2.35 to 2.79, and then decline to 1.75. Observing Table 3, we find that the first increase in the class differentials is because the transition rates for agricultural workers increase only a little bit whereas the other classes experience a quick expansion. After 1999, however, the increase in the transition rates mainly happen to smaller owners and agricultural workers (from 23.38% to 36.57%), and this is the reason why the selected class odds decline.

The urban vs. rural odds in terms of transition rates to college firstly experience a slightly decline from 1.66 to 1.46, and then quickly go up to 1.95. The class odds are not consistent with the trend occurring from the first period to the second period, increasing from 1.33 to 1.53. But in the third period, they also shift rapidly to 3.01. In this sense, in the third period, educational differentials by urban-rural residence increase by 33.6% (1.95/1.46-1), whereas class inequality measured by the selected odds increase by 96.7% (3.01/1.53-1). Looking through Table 3, we see the transition rates at this level for rural children and children from agricultural background in fact have been decreased. Class differentials in the transition rates strongly indicate that

whereas the other classes more or less inflate their transition rates (with mangers/professionals clearly the winners), agricultural workers experience even deceased in that aspect.

In sum, the descriptive statistics provide evidence for our two explicitly formulated expectations: that educational inequality, as here measured both by class differentials and urban-rural differentials, at the senior high school level would increase in the middle reform period (1993-1998), and that at the college level would increase in the late reform period (1999-2006). In addition, both measures indicate a consistent decline of inequality at the senior high school level in the late reform period. All these seem not to be supportive to the "persistent inequality" pattern observed in most modern industrial societies.

Modeling Changes in the Educational Inequality Structure

In this section, we model the transition rates based on a set of predictors: sex, parental education, annual household income, father's class status and rural/urban residential status[14]. Table 4 summarizes the findings on the determinants of each transition, which mainly serves as comparative purpose.

[TABLE 4 ABOUT HERE]

In terms of cross-transition comparison, the existing literature generally specifies a waning coefficient pattern that the logit coefficients of family background variables in nearly every cohort decline across transitions (Lucas 2000; Breen and Jonsson 2005: 236). Table 4 shows that this is generally true in China for cohorts from 1969 to 1994 if we neglect the two models on the completion of secondary schools: in general, coefficients of parental education and father's class status indeed decline across transitions; the effect of annual household income, however, is exceptionally strengthened in later transitions.

[TABLE 5 ABOUT HERE]

[14] We have conducted a set of model selection analysis. The reported models are those with the lowest BICs. The model selection results are available upon request.

Table 5 focuses only on the determinants of making transitions to senior high school and to college, by cohorts. At the senior high school level, the logit coefficients of father's class status firstly increase then decrease, a result consistent with our descriptive statistics. The same pattern holds for annual household income and rural residence. In this respect, educational inequality indeed experienced a firstly increasing and then decreasing pattern at this level of transition. The only exception is the effect of parental education, whose coefficient has increased across cohorts. One very interesting result is that the advantages of males in early reform period (1981-1992) disappear in the middle reform period (1993-1998) and even become reversed in the late reform period (1999-2006). This is exactly consistent with the results from some other research on China (Bauer et al. 1992; Hannum 2002, 2007; Hannum and Xie 2004; Lavely et al. 1990) and elsewhere: "males' advantage over females in education has gradually disappeared; in some cases, it has reversed" (Gerber and Hout 1995: p. 612).

With respect to the transition to college, Table 5 strongly suggests that again, the coefficients of father's class status, annual household income, and rural residential status are increased in the late reform period (1999-2006), especially that of mangers/professionals. Their odds of transition to college upon completion of senior high school inflate to 8.347 ($e^{2.122}$) times of those for agricultural workers, controlling for others. Likewise, the disadvantage of rural children to make successful transition is severally strengthened. In addition, household income now becomes a significant predictor for successful transition at this level. The advantages of males, again, gradually disappear across cohorts.

[TABLE 6 ABOUT HERE]

Table 6 predicts the average partial derivatives for the explanatory variables, based on the parameter estimates presented in Table 5. This is to make the interpretation of the logit coefficients easier. The results are exactly consistent with what we have discussed. One striking finding from this table is that the derivatives of father's managers/professionals status increase from .12 to .52 in the still later reform period (1999-2006). The effects of household income also shift up quickly (from .01

to .14). Moreover, the disadvantage of rural children is largely deepened since the recent educational reform.

[TABLE 7 ABOUT HERE]

Table 7 presents our investigation of the tracking difference at the higher secondary level. Again, class-based educational differentials in access to academic senior high school are increased in the middle reform period and decreased in the late reform period, as reflected in the logit coefficients.

To sum up, in this section our model estimates also support our two clearly suggested expectations. One most striking result is that the advantaged groups greatly inflate their advantages in access to college education since the start of new reform in higher education in 1999. Combined with a decreased origin-based educational inequality in access to senior high school, such a result suggests that the advantaged have shifted their previous advantages at the senior high school level to college education.

Modeling Changes in the Rural-to-Urban Selection Mechanism

Mobility studies on China show that while there is a high rate of intergenerational immobility in the Chinese working population (Chen and Dai 1995), there is also a rural-to-urban selection mechanism that the urban part tends to incorporate those who have successfully escaped from their disadvantaged rural hukou status (Wu and Trieman 2007). The main means of such mobility is education, especially higher education. In the context of quick expansion of higher education opportunities since 1999, we examine how such an educational policy influences the rural-to-urban mobility channel.

Therefore, we pay specially attention to the urban-rural difference in educational attainment. Since father's EGP class as agricultural workers (farmers, IVa+VIIb) may distort the effects of rural origin when pooling them together, we only estimate educational transition models without including father's class status, by rural and urban areas. Table 8 summarizes the results.

[TABLE 8 ABOUT HERE]

The main variable we focus on in this section is income. We see that annual household income has increased its importance for higher education in 1999-2006, but only in rural areas. Before 1999, the effects of household income are insignificant for predicting rural children's transition to college education, given their completion of senior high school. Similar patterns with regard to father's class status can be found in Table 5, as most agricultural workers are from rural areas.

Based on the model estimates in Table 8, we divide the continuous income variable into quartile dummies, and predict the probabilities of successful transition of each quartile group, by cohort, level and rural-urban residence [shall we use income as continuous instead?]. Table 9 presents the probability distribution.

[TABLE 9 ABOUT HERE]

Figure 3 plots the predicted probabilities in Table 9. It shows that in rural areas, families in the lower quartiles sometimes have probabilities as high as, or even higher than, those in the upper quartiles, which is mostly represented by the predicted probability distribution for transition to college before 1999. In addition, in the middle reform period (1993-1998), for low-income rural families the probability of going to college is high, but such a high probability is largely decreased in the late reform period (1999-2006), making higher education more difficult for those low-income rural families who previously have the mobility channel. Moreover, while in the middle reform period (1993-1998) the probability of going to college upon finishing senior high school is much higher than that of going to senior high school upon finishing junior high school, such a process is reversed in the late reform period (1999-2006): now going to college is more difficult than going to senior high school. Or put it in another way, graduation from senior high school means much less for rural children from low-income families.

The patterns found in rural areas are nearly the opposite in urban areas. In the urban society, the probability of accessing to college increases steadily across income quartiles; furthermore, in the late reform period (1999-2006), the probability of going to college outweighs that of going to senior high school. Thus, unlike their rural counterparts, senior high school credential in urban areas means much more than

previously.

In this regard, whereas the recent educational policy since 1999 makes accessing to higher education much easier for urban children, it makes that for rural children much more difficult, especially for those from low-income rural families. As a consequence, the recent educational reform tends to especially hamper the mobility channel of rural children from low-income rural families. This is consistent with what we expect in the hypothesis section.

SUMMARY AND DISCUSSION

To summarize, this study examined the trends in educational stratification during China's economic reforms from 1981 to 2006 (converted by cohorts). By using the panel data from the "China Health and Nutrition Survey", we match school-age children to their parents' background information and investigate whether and how the effects of family background on children's educational transitions change across time and across the urban-rural residential status. We have clearly formulated two theses on the change in the educational inequality structure and change in the rural-urban mobility mechanism. All of our expectations seem to be supported.

Our empirical results show that educational inequality in access to senior high school, measured by class differentials and urban-rural differentials, has increased during the middle reform period (1993-1998) and decreased in the late reform period (1999-2006). Additionally, inequality at the college level has been largely strengthened since 1999: except for parental education, the effects of the other social background measures like household income, father's class status, and rural residential status have shifted up in the period.

Furthermore, our results show that, in spite of an overall quick increase in transition rates to college since 1999, accessing to higher education have become much easier than previously for urban children, but much more difficult for rural children, especially for those from low-income rural families. As going to college is one main avenue for rural children to move out of their rural *hukou* status, our results show that rural children's mobility chances via higher education are actually

decreased in the new century.

Hence, educational expansion in China, accompanied by the rapid marketization in the reform-era, does not necessarily bring more equal access to educational opportunities among different social strata. Instead, uneven distribution of educational opportunities seems to have increased in certain historical periods in terms of certain levels of educational transition.

Consequently, our study suggests that unlike the "persistent inequality" pattern generally observed in modern industrial societies, China underwent an *increased* inequality pattern both for access to senior high school in 1993-1998 and for access to college education since 1999. However, in 1999-2006 we also find that there is a *decreased* inequality pattern for access to senior high school.

In this sense, the China experience follows more the EMI predictions than the MMI: that the advantageous groups secure educational advantages in steps. That is, when both quantitative and qualitative differences in senior high school were commonly available in 1993-1998, they mainly retained their advantages to senior high school; however, when quantitative and qualitative differences in college education were commonly available since 1999, they shifted their previous advantages at the senior high school level to the college level. As a result, the recent educational policy that expands higher education opportunities not only largely benefit urban children and children from better-off families, but also more or less hurt the most important upward mobility channel for rural children via higher education.

These findings, together with the increased inequality (see Table 1) in the reform era, suggest that contemporary China is now experiencing a trend towards social reproduction rather than de-stratification (Perish and Whyte 1984; Nee 1989; Wu and Treiman 2007). To what extent will such a reproduction trend, also observed in Western societies like Ireland and Britain (e.g., Breen and Goldthrope 2001), continue in the future? What are the implications of our findings for the change in social stratification order and the evolution of social structure in China in the future? In our view, as the rising educational inequality among students of different socioeconomic backgrounds since the 1990s could lead to increasing earnings inequality after they

complete education and enter the labor markets, in the long run, intergenerational transmission may be enhanced in the course of market transition (as observed in post-Soviet Russia by Gerber and Hout 2004), and the role of education as an important channel for socioeconomic mobility is weakened (as observed in Ireland and Britain by Breen and Whelan 1993; Whelan and Layte 2003; Breen and Golthrope 2001). Future research should be devoted to assessing the far-reaching social consequences of the rising educational inequality in China in recent years.

Finally, what are the implications of our results based on the Chinese experience for the comparative educational stratification research? For example, why cannot MMI accurately predict the increased educational inequality patterns at the senior high school level and the college level in different historical periods in China? In our view, MMI might be more applicable to describe educational stratification patterns under the context of slow and gradual changes in the education system, but may not apply to quickly-shifted educational contraction or expansion. The substantive proposition of MMI is the constant origin-specific odds in transition rates, which then implies constant odds for origin-specific educational preferences. Such unchanged odds in educational preferences for different classes would essentially require a relatively stable educational opportunity structure and a uniform decline/increase in education costs for all classes. Whereas these requirements were more or less met in advanced industrial societies along their paths of educational expansion, they are usually uneasy to exist in rapidly changed post-socialist societies like China and Russia, where state policies could easily revise the availability as well as affordability of educational opportunities. In this regard, MMI has certain scope conditions and cannot accurately describe cases where state policy quickly shifts the educational opportunity structures and educational costs, thus further shapes the educational stratification process in the society.

REFERENCES

Bauer, J., Wang F., N. Riley, and Zhao X. 1992. "Gender Educational Inequality in Urban China." *Modern China* 18:333-70.

Becker R. 2003. "Educational expansion and persistent inequalities in Germany." *European Sociological Review* 19:1–24

Bian, Yanjie. 1994. *Work and Inequality in Urban China.* New York: SUNY.

Bian, Yanjie and John Logan. 1996. "Market Transition and the Persistence of Power: The Changing Stratification System in Urban China." *American Sociological Review* 61: 739-59.

Blau, Peter M. and Otis Dudley Duncan. 1967. *The American Occupational Structure.* New York: John Wiley and Sons.

Boudon, R. 1974. *Education, Opportunities and Social Inequality*. New York: Wiley.

Breen R, ed. 2004. *Social Mobility in Europe*. Oxford: Oxford Univ. Press

Breen, Richard and John H. Goldthorpe. 1997. "Explaining Educational Differentials: Towards a Formal Rational Action Theory." *Rationality and Society* 9:275–305.

——. 2001. "Class, mobility and merit: the experience of two British birth cohorts." *European Sociological Review* 17:81–101

Breen R, Jonsson JO. 2000. "Analyzing educational careers: a multinomial transition model." *American Sociological Review* 65:754–72

——. 2005. "Inequality of Opportunity in Comparative Perspective: Recent Research on Educational Attainment and Social Mobility." *Annual Review of Sociology* 2005 31:223–43.

Breen R, Whelan CT. 1993. "From ascription to achievement? Origins, education and entry to the labour force in the Republic of Ireland during the twentieth century." *Acta Sociologica* 36:3–18

Cai, F. and G. Wan. 2006. "Studies on Income Inequality and Poverty in Transition China: What do We Know and What We should Know?" Pp 1-22 in *Income Inequality and Poverty in Transition China*, edited by Fang Cai and Guanghua Wan, Beijing, Social Science Academic Press.

Cameron, SV, Heckman JJ. 1998. “Life cycle schooling and dynamic selection bias: models and evidence for five cohorts of American males.” *J. Polit. Econ.* 106:262–333

Cao, Y., and V. Nee. 2000. “Comment: Controversies and Evidence in the Market Transition Debate.” *American Journal of Sociology* 105:1175-89.

Cheng, Yuan, and Jianzhong Dai. 1995. “Inter-generational Mobility in Modern China.” *European Sociological Review* 11:17-36.

Cobalti, Antonio. 1990. “Schooling Inequalities in Italy: Trends over Time.” *European Sociological Review* 6: 199-214.

Cobalti, A. and Schizzerotto, A. 1993. Inequality of educational opportunity in Italy. In Shavit, Y. and Blossfeld, H.-P. (eds) *Persistent Inequality: Changing Educational A ttainment in Thirteen Countries.* Westview, Boulder, Colo., pp. 155-76.

De Graaf, Paul M. 1986. “The Impact of Financial and Cultural Resources on Educational Attainment in the Netherlands.” *Sociology of Education* 59: 237-246.

De Graaf ND, de Graaf P, Kraaykamp G. 2000. Parental cultural capital and educational attainment in the Netherlands: a refinement of the cultural capital perspective. *Sociology of Education.* 73:92–111

De Graaf, Paul M., and Harry B. G. Ganzeboom. 1993. "Family Background and Educational Attainment in the Netherlands for the 1891-1960 Birth Cohorts." Pp. 75-100 in *Persistent Inequality,* edited by Yossi Shavit and Hans-Peter Blossfeld. Boulder, Colo.: Westview.

Deng, Z. and D. J. Treiman 1997. “The Impact of the Cultural Revolution on Trends in Educational Attainment in the People’s Republic of China.” *American Journal of Sociology* 103:391-428.

Erikson, Robert and John H. Goldthorpe. 1992. *The Constant Flux: A Study of Class Mobility in Industrial Societies.* Oxford, UK: Clarendon Press.

Erikson, Robert, John H. Goldthorpe, and Lucienne Portocarero. 1979. “Intergenerational Class Mobility in Three Western European Countries.” *British Journal of Sociology* 30:415-51.

Erikson R, Jonsson JO, eds. 1996. *Can Education Be Equalized?* Boulder, CO: Westview.

Featherman, D. L., and R. M. Hauser. 1978. *Opportunity and Change.* New York: Academic Press.

Gamier, M. and M. Hout. 1976. "Inequality of educational opportunity in France and the United States." *Social Science Research* 5:225-46.

Gamoran A. 2001. American schooling and educational inequality: a forecast for the 21st century. *Sociology of Education.* 74(extra issue):135–53

Ganzeboom, H. B. G., P. de Graaf, and D. J. Treiman. 1992. "An International Scale of Occupational Status." *Social Science Research* 21:1-56.

Garnier M A, Raffalovich L E. 1984. "The Evolution of Educational Opportunities in France." *Sociology of Education*: 57: 1-11.

Gerber, Theodore. 2000a. "Membership Benefits or Selection Effects? Why Former Communist party Members Do better in Post-Soviet Russia." *Social Science Research* 29: 25-50.

——. 2000b. "Educational stratification in contemporary Russia: stability and change in the face of economic and institutional crisis." *Sociology of Education* 73:219–46

——. 2001. "Reply-The Selection Theory of Persisting Party Advantages in Russia: More Evidence and implications." *Social Science Research* 30: 653-71.

Gerber, T. P. and M. Hout 1995. "Educational Stratification in Russia during the Soviet Period." *American Journal of Sociology* 101:611-60.

——. 1998. "More Shock than Therapy: Employment and Income in Russia, 1991-1995." *American Journal of Sociology* 104:1-50.

——. 2004. "Tightening Up: Declining Class Mobility during Russia's Market Transition." *American Sociological Review* 69:677-703.

Goldthrope, J. H. 1985. "On Economic Development and Social Mobility." *British Journal of Sociology* 36: 549-73.

——. 1996. "Class Analysis and the Reorientation of Class Theory: The case of Persisting Differentials in Educational Attainment." *British Journal of Sociology* 45: 481-506.

Hale, D. and L. H. Hale. 2003. "China Takes Off" November/December Issue, 2003

Foreign Affairs 82(6)36-53.

Halsey, A. H. 1975 "Education and social mobility in Britain since World War II." Pp. 501-59 in *Education, Inequality and Life Chances*. Paris: OECD.

Halsey, Albert H., Anthony F. Heath, and John M. Ridge. 1980. *Origins and Destinations: Family, Class, and Education in Modem Britain*. Oxford: Clarendon Press.

Hallinan, Maureen T. 2001. “Sociological Perspectives on Black-White Inequalities in American Schooling.” *Sociology of Education* 74 (Extra Issue: Current of Thought: Sociology of Education at the Dawn of the 21st Century): 50-70.

Hannum, E. and Y. Xie. 1994. “Trends in Educational Gender Inequality in China: 1949-1985.” *Research in Social Stratification and Mobility* 13:73-98.

Hannum, E. 2002. “Educational Stratification by Ethnicity in China: Enrollment and Attainment in the Early Reform Years.” *Demography* 39:95-117.

——. “Urban-rural Disparities in Access to Parimary and Seconday Education under Market Reforms.” *Working paper*.

Hao, DH and Lulu Li. 2006. “State Monopoly, Income Inequality and Regional Reform.” *Chinese Social Science*: X.

Hauser, R. M, and D. Featherman.1976 "Equality of schooling: Trends and prospects." *Sociology of Education* 49:99-120.

Hillmert S, Jacob M. 2003. “Social inequality in higher education: Is vocational training a pathway leading to or away from university?” *European Sociological Review* 19:319–34

Hout M, Dohan DP. 1996. “Two paths to educational opportunity: class and educational selection in Sweden and the United States.” See Erikson & Jonsson 1996, pp. 207–32

Hout M, Raftery A, Bell EO. 1993. Making the grade: Educational stratification in the United States, 1925–89. See Shavit & Blossfeld 1993, pp. 25–49.

Ishida, H., W. Muller, and J. M. Ridge 1995. “Class Origin, Class Destination, and Education: a Cross-National Study of Ten Industrial Nations.” *American Journal of Sociology* 101:145-93.

Jonsson, JO. 1993. “Eudcaiton, Social Mobility and Social Reproduction in Sweden:

Patterns and Changes." In E. J. Hansen et al. (eds) *Welfare Trends in the Scandinavian Countries*. Armonk, NY: M. E. Sharpe.

Jonsson JO, Mills C, Muller W. 1996. A half century of increasing educational openness? Social class, gender and educational attainment attainment in Sweden, Germany and Britain. See Erikson & Jonsson 1996, pp. 183–206

Kerckhoff AC. 1995. "Institutional arrangements and stratification processes in industrial societies." *Annual Review of Sociology* 21:323–47.

___. 2001. "Education and Social Stratification Processes in Comparative Perspective". *Sociology of Education* 74 (Extra Issue: Current of Thought: Sociology of Education at the Dawn of the 21st Century): 3-18.

Lavely, W., Z. Xiao, B. Li and R. Freedman 1990. "The Rise in Female Education in China: National and Regional Patterns." *The China Quarterly* 121: 61-93.

Levin, H. M. and Z. Xu. 2005. "Issues in the Expansion of Higher Education in the People's Republic of China." *The China Review* 5(1):33-59.

Li, Y. 2006. "Institutional Change and Educational Inequality: Mechanisms in Educational Stratification in Urban China (1966 —2003)" *Social Science in China* 2006(4): 97-207 [in Chinese].

Li, Z. 2006. "School Overcharge Students, Revealing Imbalances in China's Education 27 System." http://www.worldwatch.org/node/3889/print

Liang, Z. and Y. Chen. 2007. "Educational Consequences of Migration for Children in China." *Social Science Research* 36(2007):28-47

Lindbekk T. 1998. "The education backlash hypothesis: the Norwegian experience 1960–92." *Acta Sociologica* 41:151–62.

Lipset, Seymour Martin, and Reinhard Bendix. 1959. *Social Mobility in Industrial Society*. Berkeley: University of California Press.

Liu, J. 2004. *Education in Transitional Chinese Society,* Liaoning Renmin Press. [in Chinese]

Liu, JM and Yang JH. 2007. "Paying Attention to Educational Equality of Poor Children." *Journal of Huazhong Normal University* 46: 2.

Liu, JM. 2004. "Educational Choices and Outcomes." *Journal of Renmin University of China*: 1.

___. 2005. “Educational Expansion and Difference in Transition Opportunities.” *Society*: 3.

___. 2006a. “Structural Changes in the Labor Market and Returns to Human Capital.” *Sociological Research*: 6.

___. 2006b. “Marketization and State Regulation.” *XXXX*: 6.

Lucas, SR. 2001. “Effectively maintained inequality: education transitions, track mobility, and social background effects.” *American Journal of Sociology* 106:1642–90

Lucas, Samuel R.; Aaron D. Good. “Race, Class, and Tournament Track Mobility.” *Sociology of Education* 74: 139-156.

Mare, R. D. 1980. “Social Backgrounds and Educational Continuation Decisions.” *Journal of American Statistical Association* 75:295-305.

___. 1981. "Change and Stability in Educational Stratification." *American Sociological Review* 46:72-87.

___. 1993. "Five Decades of Assortive Mating." *American Sociological Review* 56:15-32.

Mare, R. D., and M. D. Chen. 1986. “Further Evidence on Number of Siblings and Educational Stratification.” *American Sociological Review* 51: 403-412.

Mare, R. D., and Vida Maralani. 2005. “The Intergenerational Effects of Changes in Women’s Educational Attainments.” *American Sociological Review* 71: 542-64.

Min, W. (eds). 2007. *China Education and Human Resource Development Report 2005-2006*. Beijing: Peking University Press. [in Chinese].

Ministry of Education and National Bureau of Statistics 2002. *China Educational Finance Statistical Yearbook 2001*. Beijing: China Statistics Press.

Muller W, Karle W. 1993. “Social Selection in Educational Systems in Europe.” *European Sociological Review* 9:1–23

National Bureau of Statistics. 2000. *Comprehensive Statistical Data and Materials on 50 Years of New China,* Beijing: China Statistics Publishing House.

Nee, V. 1989. “A Theory of Market Transition: From Redistribution to Markets in State Socialism.” *American Sociological Review* 54: 663-81.

___. 1996. “The Emergence of a Market Society: Changing Mechanisms of Stratification in China.” *American Journal of Sociology* 101:908-49.

Nee, Victor and R. Matthews. 1996. “Market Transition and Societal Transformation in Reforming State Socialism.” *Annual Review of Sociology* 22: 401-35.

Need A, de Jong U. 2001. Educational differentials in the Netherlands: testing rational action theory. *Rationality and Society* 13:71–98

Pisati M. 1997. “Mobility regimes and generative mechanisms: a comparative analysis of Italy and the United States.” *European Sociological Review* 13:179–98.

Raftery, A. E. and M. Hout. 1993. “Maximally Maintained Inequality: Expansion, Reform, and Opportunity in Irish Education: 1921-1975.” *Sociology of Education* 66:41-62.

Róna-Tas, A. 1994. “The First Shall Be Last? Entrepreneurship and Communist Cadre in the Transition from Socialism.” *American Journal of Sociology* 100:40-69.

Saar, Ellu. 1997.*"*Transitions to Tertiary Education in Belarus and the Baltic Countries.*" European Sociological Review 13: 139-58.*

Shavit, Y. and H. Blossfeld 1993. *Persistent Inequality.* Boulder, CO. Westview Press.

Shavit Y, Westerbeek K. 1998. “Educational stratification in Italy: reforms, expansion, and equality of opportunity.” *European Sociological Review* 14:33–47

Sieben I, J Huinink and de Graaf PM. 2001. “Testing the modernization hypothesis and the socialist ideology hypothesis: a comparative sibling analysis of educational attainment and occupational status.” *British Journal of Sociology.* 52:441–67

Simkus, A. and R. Andorka. 1982. “Inequalities in Educational Attainment in Hungary, 1923- 1973.” *American Sociological Review* 47: 740-51.

Szelényi, I. and E. Kostello. 1996. “The Market Transition Debate: Toward a Synthesis.” *American Journal of Sociology* 101:1082-96.

Titma M, Tuma NB, Roosma K. 2003. “Education as a factor in intergenerational mobility in Soviet society.” *European Sociological Review* 19:281–98

Tsang, M. C. and Y. Ding. 2005. “Resource Utilization and Disparities in Compulsory Education in China.” *The China Review* 5:1-31.

Treiman, D. J. 1970 “Industrialization and Social Stratification.” Pp 207-34 in *Social Stratification: Research and Theory for the 1970s*. edited by Edward Laumann. Indianapolis: Bobbs-Merrill.

Treiman DJ, Yip KB. 1989. Educational and occupational attainment in 21 countries. In *Cross-National Research in Sociology*, ed. ML Kohn, pp. 373–94. Newbury Park, CA: Sage

Treiman, D.J. and A.G. Walder. 1996. “Life Histories and Social Change in Contemporary China.” Distributed by the UCLA Social Science Data Archive. Available on-line at http://www.sscnet.ucla.edu/issr/da

Tsui, K. 1997. “Economic Reform and Attainment in Basic Education in China.” *The China Quarterly* 149:104-27.

Vallet LA. 2004. Change in intergenerational class mobility in France from the 1970s to the 1990s and its explanation: an analysis following the CASMIN approach. See Breen 2004, pp. 115–48

Valverde,RD and MR Vila. 2003. “Internal Migration and Inequalities: The Influence of Migration Origin on Educational Attainment in Spain.” *European Sociological Review* 19:299–317.

Walder, Andrew G. 1986. *Communist Neo-Traditionalism: Work and Authority in Chinese Industry.* Berkeley: Univ. of California Press.

——. 1992. “Property Rights and Stratification in Socialist Redistributive Economies.” *American Sociological Review* 57:524-39.

——. 1995. “Career Mobility and the Communist Political Order.” *American Sociological Review* 60: 309-28.

Walder, Andrew G. and Bobai Li and Donald J. Treiman. 2000. “Politics and Life Chances in a State Socialist Regime: Dual Career Paths into the Urban Chinese Elite: 1949 to 1996.” *American Sociological Review* 65: 191-209.

Walder, A. G. 2002. “Markets and Income Inequality in Rural China: Political Advantage in an Expanding Economy.” *American Sociological Review* 67:231-53.

Walder, A.G., B. Li, and D. J. Treiman. 2000. “Politics and Life Chances in State Socialist Regime: Dual Career Paths into the Urban Chinese Elite, 1949-1996.” *American Sociological Review* 65:191-209.

Whelan CT, Layte R. 2003. “Late industrialization and the increased merit selection hypothesis: Ireland as a test case.” *European Sociological Review* 18:35–50

Wong, R. S.K. 1998. “Multidimensional Influences of Family Environment in Education: The Case of Socialist Czechoslovakia.” *Sociology of Education* 71:1-22.

World Income Inequality Database. 2004. http://www.wider.unu.edu/wiid/wiid.htm

Wu, X. 2002. “Work Units and Inequality: The Effects of Market Transition in Urban China.” *Social Forces* 80(3): 1069-1099.

——.2006. “Communist Cadres and Market Opportunities: Entry to Self-Employment in China, 1978-1996.” *Social Forces* 85 (1): 389-411.

Wu, X. and D. J. Treiman 2004. “The Household Registration System and Social Stratification in China 1955-1996.” *Demography* 41(2): 363-82.

Wu, X. and D. J. Treiman. 2007. “Inequality and Equality under Chinese Socialism: The *Hukou* System and Intergenerational Occupational Mobility.” *American Journal of Sociology* 103(2):415-45.

Wu, X. and Y. Xie. 2003. “Does the Market Pay Off? Earnings Returns to Education in Urban China.” *American Sociological Review* 68:425-42.

Xie, Yu and Xiaogang Wu. 2005. “Reply: Market Premium, Social Process, and Statisticism.” *American Sociological Review* 70: 865- 70.

Xie, Y. and E. Hannum 1996. “Regional Variation in Earnings Inequality in Reform-Era Urban China.” *American Journal of Sociology* 102: 950-92.

Yang, D. 2006. “Access to Higher Education: Widening Social Class Disparities” *Tsinghua Journal of Education* 27(1) 19-26.

Zhou, Xueguang. 2000. “Economic Transformation and Income Inequality in Urban China: Evidence from Panel Data.” *American Journal of Sociology* 105: 1135-74.

——. 2001. “Political Dynamics and Bureaucratic Career Patterns in the People’s Republic of China.” *Comparative Political Studies* 34: 1036-62.

Zhou, Xueguang and Liren Hou. 1999. “Children of the Cultural Revolution: The State and the Life Courses in the People’s Republic of China.” *American Sociological Review* 64: 12-36.

Zhou, Xueguang and Nancy B. Tuma and Phyllis Moen. 1996. “Stratification Dynamics under State Socialism: The Case of Urban China, 1949-1993.” S*ocial Forces* 74: 759-96.

——. 1997. “Institutional Change and Job-shift Patterns in Urban China: 1949 to 1994.” *American Sociological Review* 62: 339-65.

Zhou, X., Phyllis Moen, and Nancy Brandon Tuma. 1998. “Educational Stratification in Urban China: 1949-1994.” *Sociology of Education* 71:199-222.

Table 1: Selected Indicators of Economic Growth and Income Inequality in China, 1980-2005

Year	A. GDP per capita (RMB yuan)	B: GDP per capita Compared to 1978 price as 100	C: Gini Index	D: Urban-Rural Ratio of Income Ratio per capita
1978	379	100.0	0.317	2.35
1980	460	113.0	0.295	2.75
1985	853	175.5	0.331	2.14
1990	1643	237.3	0.357	2.51
1995	4854	398.6	0.290	2.79
2000	6392	575.5	0.390	3.10
2005	14040	878.9	0.449	3.22

Data sources:

A, B, D: *Comprehensive Statistical Data and Materials on 50 Years of New China,* China Statistics Publishing House, also available at http://www.stats.gov.cn/tjsj/ndsj/

Column C: World Income Inequality Database http://www.wider.unu.edu/wiid/wiid.htm

Table 2: Government Educational Spending and Educational Expansion in China, 1978-2005

Year	Government Budgetary Education Expenditure (100 million Yuan)	Enrollment rate of school-age children %	Transition rate to junior high school %	Transition rate to senior high school %	Transition rate to tertiary school %
1978	76.23	87.7	87.7	40.9	5.89
1979	93.16	82.8	82.8	37.0	3.84
1980	113.19	75.9	75.9	39.7	4.56
1981	122.22	68.3	68.3	28.4	5.74
1982	137.20	66.2	66.2	27.1	10.1
1983	154.72	67.3	67.3	27.1	16.6
1984	180.14	66.2	66.2	27.6	25.0
1985	224.89	68.4	68.4	25.8	31.5
1986	267.30	69.5	69.5	24.3	25.5
1987	276.57	69.1	69.1	22.8	25.0
1988	330.91	70.4	70.4	21.1	26.7
1989	397.72	71.5	71.5	21.3	24.5
1990	563.99	74.6	74.6	22.5	26.1
1991	617.83	75.7	75.7	22.5	27.8
1992	728.76	79.7	79.7	21.3	33.3
1993	867.76	81.8	81.8	20.1	39.9
1994	1174.74	86.6	86.6	21.1	43.0
1995	1411.52	90.8	90.8	22.3	46.0
1996	1671.70	92.6	92.6	22.1	47.1
1997	1862.55	93.7	93.7	22.4	45.1
1998	2032.45	94.3	94.3	22.8	43.1
1999	2287.18	94.4	94.4	24.9	60.7
2000	2562.61	94.9	94.9	29.4	73.2
2001	3057.01	95.5	95.5	32.7	78.8
2002	3491.40	97	97.0	36.0	83.5
2003	3850.62	97.9	97.9	37.7	83.4
2004	4465.86	98.9	98.1	-	82.5
2005	[a] -	99.2	98.4	-	76.3

Sources: *Comprehensive Statistical Data and Materials on 50 Years of New China,* Beijing: China Statistics Publishing House. The data after 1998 from http://www.stats.gov.cn/tjsj/ndsj/
Transition rates are computed from State Bureau of Statistics (SBS) 2006; SBS 1984, p.483; SBS 1988, p.876 -78, 889; SBS 1993, p.710- 12, 726; SBS 2004, p.779- 80, 784; *Educational Achivements in China*, p.22-25, 38.

[a] data unavailable for this year.

Table 3: Descriptive Statistics, CHNS Cohorts from 1969-1994

	Primary to Junior High				Junior High to Senior High				Senior High to College			
	Overall	1981-1992 [a]	1993-1998	1999-2006	Overall	1981-1992	1993-1998	1999-2006	Overall	1981-1992	1993-1998	1999-2006
A. Social Compositions												
Parental Education: Mean	7.463	6.371	8.614	9.226	7.605	6.522	8.033	9.547	8.799	8.195	8.60739	10.148
Std	3.764	3.860	3.274	2.815	3.775	3.969	3.411	2.804	3.960	4.425	3.793	3.018
Annual Household Income: Mean	8.439	8.144	8.598	9.061	8.607	8.271	8.693	9.225	9.028	8.599	9.017	9.639
Std	.920	.812	.894	.848	.891	.770	.856	.829	.786	.541	.784	.671
Father's EGP Composition %												
Profs., managers (I,II)	13.21	14.84	9.93	12.06	16.08	18.27	14.13	13.86	44.25	68.31	30.94	27.42
Routine nonmanual (III)	3.75	4.91	1.74	3.14	4.05	5.69	2.12	3.10	5.21	5.28	5.04	5.38
Small owners (IVa,IVb)	4.98	1.99	8.80	9.30	5.72	2.11	7.37	11.65	7.49	3.52	8.63	11.83
Foremen, skilled (V,VI)	9.24	8.96	8.62	10.30	10.08	10.03	9.49	11.06	9.76	4.23	11.15	16.13
Semi- & Unskilled (VIIa)	11.33	10.95	11.76	11.56	12.80	12.84	11.40	14.75	10.56	5.99	12.23	15.05
Agriculture (IVa,VIIb)	57.48	58.36	59.15	53.64	51.27	51.05	55.50	45.58	22.73	12.68	32.01	24.19
Rural Residence	70.56	69.98	71.69	70.57	67.06	66.32	70.52	63.38	52.75	53.41	57.6	57.2
B. Transition Rates %												
Overall	92.71	91.31	93.17	96.36	36.74	32.86	37.07	45.80	41.75	29.41	45.58	56.38
Rural	91.48	89.61	92.51	95.68	30.2	27.54	29.95	37.57	31.79	22.47	38.19	36.54
Urban	95.65	95.27	94.83	97.99	50.03	43.34	54.09	60.06	52.86	37.37	55.61	71.22
Father's EGP Composition %												
Profs., managers (I,II)	98.17	97.11	100.00	100.00	57.31	50.70	66.43	63.83	40.48	25.77	50.00	80.39
Routine nonmanual (III)	96.49	95.24	100.00	100.00	50.38	46.07	57.14	61.90	43.59	20.00	57.14	60.00
Small owners (IVa,IVb)	97.36	98.04	96.04	98.65	42.16	30.30	39.73	49.37	48.21	20.00	50.00	59.09
Foremen, skilled (V,VI)	97.15	95.22	100.00	98.78	49.08	40.13	57.45	57.33	52.05	25.00	58.06	56.67
Semi- & Unskilled (VIIa)	95.35	93.59	97.04	97.83	33.82	30.35	35.40	39.00	41.77	35.29	38.24	50.00
Agriculture (IVa,VIIb)	90.68	88.18	93.81	94.15	25.09	21.53	23.82	36.57	28.24	19.44	32.58	26.67
N	6,322	3,591	1,639	1,016	4,478	2,185	1,411	882	1,109	425	441	243

Note: [a] These are proximate of the historical periods when the children make each specific transition rather than birth cohorts. They are derived in the following ways: for transitions from primary school to junior high school, from junior high school to senior high school, and from senior high school to college, we add the normal transition ages of 12, 15 and 18 to respective birth cohorts to represent the historical periods. Therefore, birth cohorts are different in each transition. For the transition to junior high school, the distinguished birth cohorts are: 1969-1980, 1980-1986, and 1987-1991. For the transition to senior high school, the birth cohorts are: 1969-1977, 1978-1983, and 1984-1994. For the transition to college, they are: 1969-1974, 1975-1981, and 1982-1988.

Table 4: Logistic Regression Coefficient Estimates of Educational Transitions, by Level

COEFFICIENT	Primary to Junior	Completion of Junior	Junior to Senior	Completion of Senior	Senior to College
Male	0.284**	0.125	0.135*	0.152	0.113
	(0.12)	(0.11)	(0.079)	(0.19)	(0.16)
Parental Education					
Primary [baseline]					
Junior high	0.874***	0.390***	0.468***	0.266	0.285
	(0.15)	(0.13)	(0.095)	(0.24)	(0.21)
Senior high	1.061***	0.549***	0.947***	-0.0998	0.656***
	(0.23)	(0.18)	(0.11)	(0.26)	(0.22)
College	1.327	1.221	1.522***	1.732*	1.687***
	(1.03)	(0.75)	(0.29)	(1.05)	(0.38)
Annual Household Income (logged)	0.0881	0.0771	0.211***	-0.0793	0.425***
	(0.063)	(0.065)	(0.053)	(0.12)	(0.12)
Father's EGP [a]					
Profs., managers (I,II)	1.145***	0.830***	0.729***	1.063***	0.115
	(0.35)	(0.23)	(0.12)	(0.30)	(0.23)
Routine nonmanual (III)	0.569	1.100***	0.716***	0.915**	0.610
	(0.44)	(0.43)	(0.19)	(0.45)	(0.40)
Small owners (IVa,IVb)	0.790*	0.582*	0.339**	0.879**	0.602*
	(0.43)	(0.30)	(0.17)	(0.42)	(0.34)
Foremen, skilled (V,VI)	0.863***	1.012***	0.668***	0.991***	0.706**
	(0.31)	(0.26)	(0.13)	(0.33)	(0.31)
Semi- & Unskilled (VIIa)	0.663***	0.923***	0.153	0.767**	0.385
	(0.24)	(0.23)	(0.13)	(0.30)	(0.30)
Rural Residence	-0.470***	-0.203	-0.565***	-0.466**	-0.444***
	(0.18)	(0.15)	(0.089)	(0.22)	(0.17)
Constant	1.498***	1.119**	-2.776***	2.007*	-4.757***
	(0.55)	(0.56)	(0.46)	(1.09)	(1.17)
N	4512	3803	3208	949	732
Log-likelihood	-1016.07	-1170.00	-1881.85	-378.14	-447.44

Note: [a] The baseline is Agriculture workers (IVa,VIIb).

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5: Logistic Regression Coefficient Estimates of Educational Transitions, by Cohort and Level

COEFFICIENT	Junior to Senior			Senior to College		
	1983-1992	1993-1998	1999-2006	1987-1992	1993-1998	1999-2006
Male	0.306***	0.180	-0.284*	0.477	0.191	-0.456
	(0.12)	(0.15)	(0.17)	(0.32)	(0.25)	(0.36)
Parental Education						
Primary [baseline]						
Junior high	0.617***	0.305*	0.205	0.415	0.0424	0.253
	(0.13)	(0.18)	(0.25)	(0.39)	(0.32)	(0.57)
Senior high	1.039***	0.675***	0.810***	0.983**	0.0767	0.377
	(0.19)	(0.20)	(0.26)	(0.44)	(0.36)	(0.57)
College	1.680***	1.630*	1.280**	2.667***	0.724	0.230
	(0.38)	(0.84)	(0.61)	(0.60)	(0.68)	(1.19)
Annual Household Income (logged)	0.152*	0.250**	0.155	0.156	0.0383	0.610*
	(0.090)	(0.10)	(0.11)	(0.32)	(0.17)	(0.31)
Father's EGP [a]						
Profs., managers (I,II)	0.637***	1.182***	0.526*	0.0137	0.454	2.210***
	(0.18)	(0.23)	(0.28)	(0.55)	(0.36)	(0.59)
Routine nonmanual (III)	0.713***	1.046**	0.421	0.480	0.928	1.118
	(0.25)	(0.47)	(0.48)	(0.83)	(0.57)	(0.81)
Small owners (IVa,IVb)	0.148	0.416	0.301	0.571	0.648	1.203**
	(0.42)	(0.28)	(0.28)	(0.98)	(0.48)	(0.60)
Foremen, skilled (V,VI)	0.575***	1.032***	0.552*	0.318	0.949**	1.110**
	(0.20)	(0.24)	(0.29)	(0.80)	(0.45)	(0.57)
Semi- & Unskilled (VIIa)	0.308	0.245	-0.0669	1.147	0.0497	0.578
	(0.19)	(0.23)	(0.26)	(0.70)	(0.43)	(0.56)
Rural Residence	-0.339**	-0.934***	-0.672***	-0.161	-0.411	-1.417***
	(0.14)	(0.17)	(0.18)	(0.34)	(0.28)	(0.37)
Constant	-2.626***	-2.828***	-1.645	-3.487	-0.849	-6.065**
	(0.76)	(0.94)	(1.03)	(2.80)	(1.57)	(3.03)
N	1545	990	673	271	277	184
Log-likelihood	-877.79	-560.73	-425.73	-133.38	-182.28	-98.33

Note: [a] The baseline is Agriculture workers (IVa,VIIb).

For the overall model of each transition, see Column 3 and 5 in Table 4.

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6: Average Partial Derivatives of the Transition Probabilities with Respect to Explanatory Variables, based on Model Estimates in Table 5

Independent Variables	Junior to Senior			Senior to College		
	1983-1992	1993-1998	1999-2006	1987-1992	1993-1998	1999-2006
Male	0.0641	0.0409	-0.0701	0.0821	0.0471	-0.112
Parental Education						
Primary	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Junior high	0.1293	0.0691	0.0506	0.0714	0.0105	0.062
Senior high	0.2177	0.1532	0.2002	0.1694	0.0189	0.0927
College	0.3519	0.3697	0.3165	0.4594	0.1785	0.0565
Annual Household Income (logged)	0.0318	0.0566	0.0382	0.0269	0.0094	0.1497
Father's EGP						
Profs., managers (I,II)	0.1334	0.2681	0.13	0.0024	0.1119	0.5426
Routine nonmanual (III)	0.1494	0.2371	0.1041	0.0826	0.2289	0.2744
Small owners (IVa,IVb)	0.031	0.0943	0.0744	0.0984	0.1599	0.2954
Foremen, skilled (V,VI)	0.1206	0.234	0.1365	0.0547	0.2341	0.2725
Semi- & Unskilled (VIIa)	0.0646	0.0556	-0.0166	0.1976	0.0123	0.142
Agricultural (IVa,VIIb)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Rural Residence	-0.071	-0.2118	-0.1661	-0.0277	-0.1014	-0.3479

Table 7: Multinomial Logistic Regression Coefficient Estimates of Educational Transitions at Senior Level, by Cohort

COEFFICIENT	Overall		1983-1992		1993-1998		1999-2006	
	Academic	Vocational	Academic	Vocational	Academic	Vocational	Academic	Vocational
Male	0.0978	-0.178	0.265**	-0.288	0.101	-0.263	-0.288	0.0232
	(0.083)	(0.12)	(0.12)	(0.20)	(0.16)	(0.19)	(0.18)	(0.28)
Parental Education								
Primary [baseline]								
Junior high	0.590***	0.683***	0.690***	0.601**	0.410**	0.350	0.317	0.618
	(0.098)	(0.14)	(0.14)	(0.23)	(0.19)	(0.22)	(0.26)	(0.42)
Senior high	1.065***	0.645***	1.181***	0.871***	0.730***	0.190	0.812***	0.128
	(0.12)	(0.18)	(0.20)	(0.32)	(0.21)	(0.27)	(0.27)	(0.47)
College	2.428***	1.917***	2.680***	2.222***	1.548	-0.160	2.514**	2.202*
	(0.48)	(0.56)	(0.61)	(0.72)	(1.13)	(1.46)	(1.12)	(1.30)
Annual Household Income (logged)	0.237***	0.145*	0.121	-0.231	0.288**	0.134	0.202*	0.233
	(0.056)	(0.077)	(0.093)	(0.15)	(0.11)	(0.11)	(0.12)	(0.17)
Father's EGP [a]								
Profs., managers (I,II)	0.952***	0.973***	0.872***	1.462***	1.559***	1.102***	0.742**	1.066**
	(0.13)	(0.19)	(0.19)	(0.29)	(0.28)	(0.35)	(0.31)	(0.48)
Routine nonmanual (III)	0.951***	1.036***	0.983***	1.606***	1.338**	0.888	0.700	1.311
	(0.21)	(0.29)	(0.27)	(0.39)	(0.53)	(0.67)	(0.56)	(0.88)
Small owners (IVa,IVb)	0.424**	0.494*	0.134	-0.307	0.511*	0.381	0.452	0.854*
	(0.18)	(0.25)	(0.42)	(1.01)	(0.30)	(0.36)	(0.29)	(0.44)
Foremen, skilled (V,VI)	0.788***	0.641***	0.645***	0.727**	1.338***	0.957***	0.777**	1.051**
	(0.14)	(0.21)	(0.21)	(0.35)	(0.28)	(0.35)	(0.31)	(0.48)
Semi- & Unskilled (VIIa)	0.238*	0.533***	0.341*	0.451	0.524**	0.900***	0.0640	0.729*
	(0.13)	(0.18)	(0.19)	(0.35)	(0.25)	(0.28)	(0.28)	(0.40)
Rural Residence	-0.723***	-0.625***	-0.449***	-0.654***	-1.333***	-1.013***	-0.944***	-1.042***
	(0.095)	(0.14)	(0.14)	(0.23)	(0.20)	(0.24)	(0.19)	(0.30)
Constant	-2.782***	-2.991***	-2.229***	-0.408	-2.596**	-1.743*	-1.785	-3.769**
	(0.49)	(0.68)	(0.79)	(1.25)	(1.01)	(1.03)	(1.12)	(1.62)
N	3208	3208	1545	1545	990	990	673	673
Log-likelihood	-2748.21		-1206.34		-891.39		-585.38	

Note: [a] The baseline is Agriculture workers (IVa,VIIb).
Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 8: Logistic Regression Coefficient Estimates of Educational Transitions, by Cohort and Rural-urban Residence

Transitions	1981-1992		1993-1998		1999-2006	
	Rural	Urban	Rural	Urban	Rural	Urban
Junior to Senior						
Male	0.327**	0.0915	0.0937	0.418	-0.203	-0.365
	(0.14)	(0.21)	(0.16)	(0.28)	(0.19)	(0.29)
Parental Education (Years)	0.118***	0.167***	0.154***	0.139***	0.132***	0.206***
	(0.023)	(0.025)	(0.031)	(0.043)	(0.040)	(0.056)
Annual Household Income (logged)	0.294***	0.0590	0.389***	0.388**	0.126	0.516**
	(0.092)	(0.20)	(0.11)	(0.18)	(0.12)	(0.20)
Constant	-4.345***	-2.061	-5.535***	-4.482***	-2.774**	-6.272***
	(0.76)	(1.72)	(1.05)	(1.71)	(1.09)	(1.95)
N	1127	435	773	228	484	239
Senior to College						
Male	0.337	0.648	0.266	-0.245	-0.568	-0.256
	(0.47)	(0.43)	(0.31)	(0.41)	(0.47)	(0.45)
parental Education (Years)	0.111	0.159***	0.0150	0.0725	0.173*	0.122
	(0.069)	(0.054)	(0.053)	(0.055)	(0.094)	(0.089)
Annual Household Income (logged)	0.160	-0.0485	0.0698	0.482	0.630**	0.572
	(0.43)	(0.59)	(0.19)	(0.32)	(0.29)	(0.42)
Constant	-3.840	-2.281	-1.367	-4.807	-8.129***	-5.718
	(3.78)	(5.05)	(1.67)	(3.03)	(2.86)	(4.04)
N	159	118	187	99	92	111

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 9: Predicted Probabilities based on Model Estimates in Table 8, Using Income Quartile Dummies

	Income Quartiles	Junior to Senior			Senior to College		
		1981-1992	1992-1998	1999-2006	1981-1992	1992-1998	1999-2006
Rural	25%	0.1972	0.1736	0.4071	0.2223	0.3936	0.1837
	50%	0.3084	0.2712	0.2292	0.1129	0.3304	0.0982
	75%	0.2698	0.2627	0.4264	0.3111	0.3847	0.2535
	100%	0.3744	0.3938	0.3795	0.1371	0.4191	0.4335
Urban	25%	0.3841	0.4514	0.3834	0.2963	0.3888	0.5677
	50%	0.4805	0.5767	0.3985	0.2761	0.5790	0.7498
	75%	0.4196	0.6670	0.6455	0.2284	0.6476	0.7492
	100%	0.2694	0.6684	0.6764	0.5120	0.5766	0.7306

Figure 1: National Statistics and CHNS Statistics on the Transition Rates, by Level

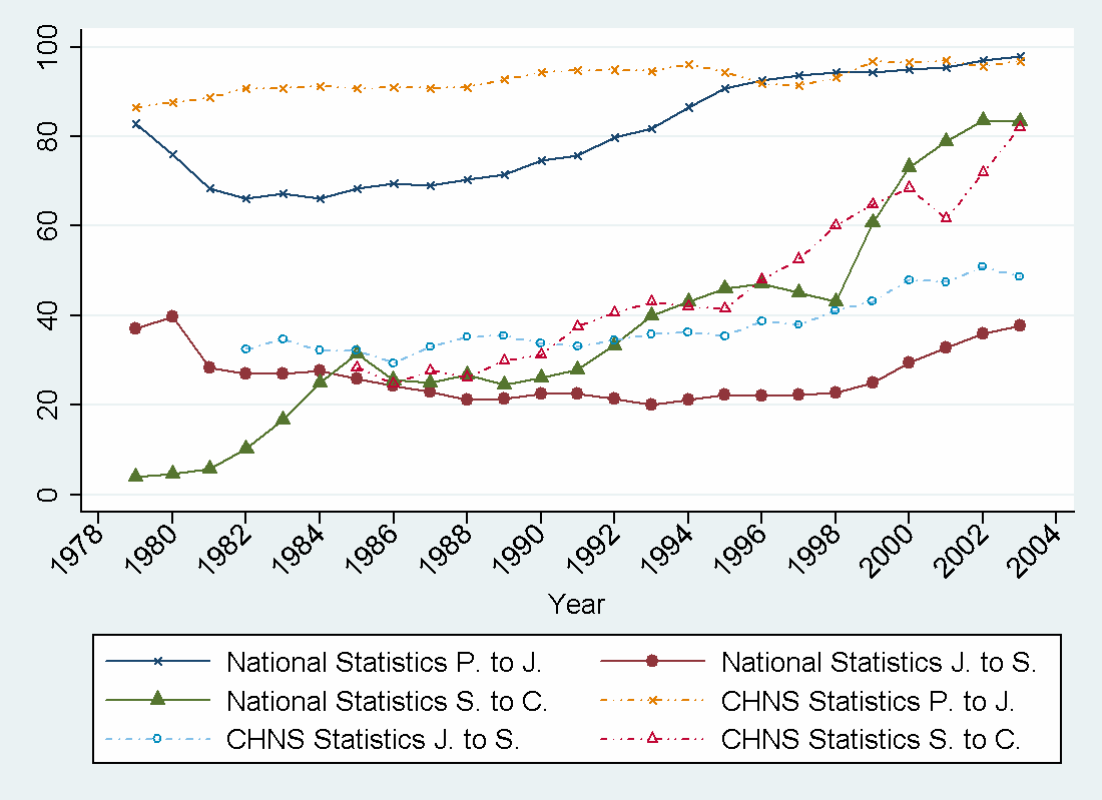

Figure 2: Odds of Transition Rates, by Cohort and Level

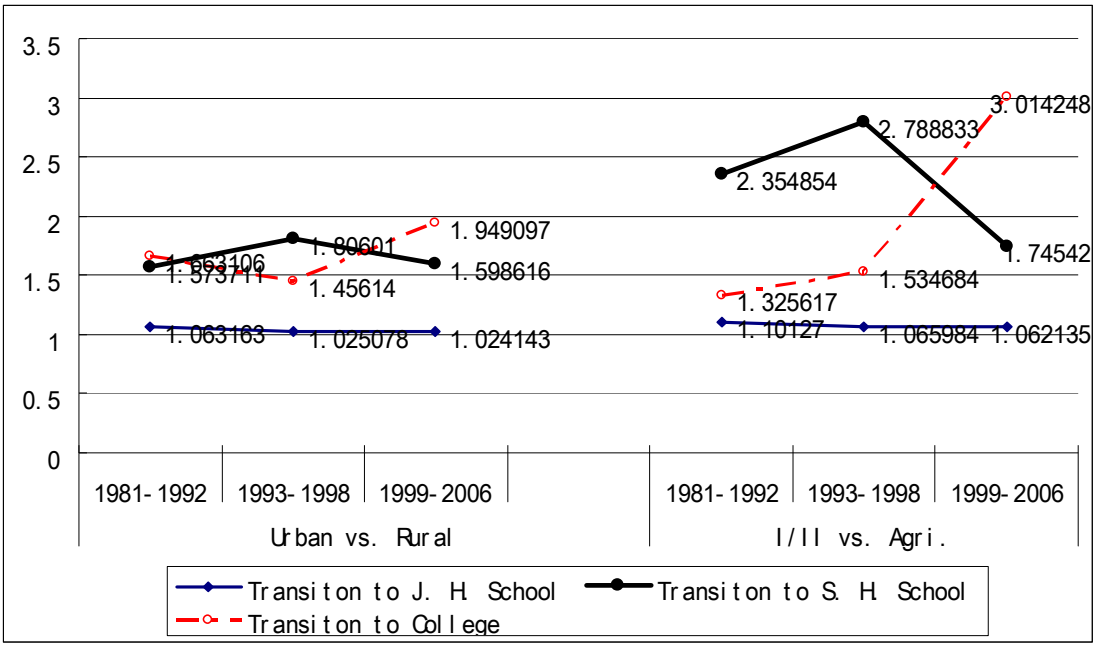

Figure 3: Predicted Probabilities for Making Successful Transition across Income Quartiles, by Cohort, Level and Rural-Urban Residence