ECONOMIC TRANSITION, EDUCATIONAL EXPANSION, AND EDUCATIONAL INEQUALITY IN CHINA, 1990-2000[1]

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ABSTRACT

This paper examines the trend in educational stratification during China's economic reforms in the 1990s. Based on the samples of population census data in 1990 and 2000, I match the school-age children to their parents' background information within the same households and investigate the effects of family background on children's school enrollment and transitions. Results show that, despite the substantial expansion of educational opportunities within the decade, family backgrounds continue to play an important role in determining school enrollment status and school transitions. Over the decade, children of rural *hukou* status have become even more disadvantaged compared to their urban counterparts and the effect of father's socioeconomic status on school enrollment has been enhanced. While children of rural *hukou* status have gained more opportunities at junior high school level as a result of saturation in 9-year compulsory education in the nation, rural-urban gap in the likelihood of transition to senior high school level has been enlarged and the effect of father's socioeconomic status on the transition increased, even after controlling for the regional variations in economic development.

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Education plays an important role in modern societies, both as an avenue of social mobility and as a tool for social reproduction. 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, Muller and Ridge 1995). In other words, access to educational opportunities is unequally distributed among different social strata. The increasing importance of education, together with a long term growth in enrollment in the school system in the process of economic development, has led some scholars to claim that individuals' educational achievement became more and more independent of their family backgrounds (Boudon 1974; Treiman 1970). However, linear regression analyses of educational attainment reveal that the effect of family backgrounds have been stable over time in many industrialized countries (e. g., Featherman and Hauser 1978). This is because the expansion of education and the distribution of educational opportunities are two separate processes (Mare 1980): the former may not necessarily lead to a more equal access to education among different social groups.

The expansion of the educational system in many countries in the 20th century, reinforced by the educational reforms, seems to have had little impact on the role played by family backgrounds in children's educational attainment (Shavit and Blossfeld 1993). Just as the income growth does not necessarily lead to a more equal distribution of income, educational expansion has no intrinsic implication on the change in educational inequality. Instead, the distribution of educational opportunities may resemble the distribution of other scarce resources that affect

educational outcomes, which are both embedded in the fundamental social structure of a particular country.

Since education plays an increasingly important role in getting a better job and receiving more economic benefits in any modern society, the question of "who gets educated" assumes a central place in stratification research (Deng and Treiman 1997; Shavit and Blossfeld 1993). To understand the change of stratification outcomes in a society which is undergoing a dramatic transformation in the mechanism of resource distribution, it is necessary to investigate how the transformation has altered the allocation of educational opportunities among different social strata, which may have a long-term impact on the evolution of social structure.

The dramatic institutional changes in former state socialist countries had stimulated a lively debate among sociologists in the 1990s on how the social stratification order is reshaped by the shift from the state socialism to market capitalism as the main mechanism of resources distribution (Cao and Nee 2000; Bian and Logan 1996; Gerber and Hout 1998; Nee 1989, 1991, 1996; Nee and Matthews 1996; Parish and Michelson 1996; Róna-Tas 1994; Szelényi and Kostello 1996; Walder 1996; Xie and Hannum 1996; Zhou 2000). Much of the existing literature in this field, nevertheless, is largely focused on income outcomes (e.g., Nee 1989; Bian and Logan 1996; Gerber and Hout 1998; Xie and Hannum 1996; Zhou 2000). Despite the growing importance of education (human capital) in determining income (e.g., Bian and Logan 1996; Zhou 2000) and controversy of theoretical interpretation of the evidence (Xie and Hannum 1996; Wu and Xie 2003), few scholars have explicitly examined the impact of economic reforms on educational inequality per se, an important issue to understand the changes in the patterns of job shifts, career mobility, and intergenerational transfers in the era of market transition (Gerber and Hout 200x; Zhou; Walder, Li and Treiman 2000; Tuman and Moen 1997).

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In this paper I investigate the change in educational stratification in the late reform period, during which substantial socioeconomic transformations have been undertaking. Based on the samples of population census data in 1990 and 2000, I match the school-age children from age 6 to 18 to their parents' background information within the same households, and investigate the role of family background on children's school enrollment and transitions over the decade, focusing on the change in the effects of the household registration (*hukou*) status and father's socioeconomic status.

In the rest of the paper, I first provide the historical background on economic reforms and educational expansion in China since the 1980s, and explain how the census/by-census data can be employed to address the temporal trend in educational inequality. I then demonstrate how family socioeconomic backgrounds have affected children's educational outcomes in the context of economic marketization and educational expansion. Finally, I discuss the implications on the change of inequality structure in China.

ECONOMIC REFORMS, SCHOOL EXPANSION AND EDUCATIONAL INEQUALITY

Few nations have changed as fast - or as dramatically - as China has since the 1970s. The world's most populous nation has radically liberalized its economy since 1978. As a result, the country's GDP per capita has consistently grown from 379 RMB yuan in 1978 to 14,040 RMB yuan in 2005 (Column A of Table 1). On the basis of 1978 price, the per capita GDP has increased by 5.8 times in 2000 and 8.8 times in 2005, with an annual growth of about 9 percent (Nation Bureau of Statistics 2006). The economic growth has been especially phenomenal since 1992, when Deng Xiaoping called for further market-oriented reforms in his famous tour to southern China. Market economies were fully legitimized in Communist Party's ideology since

then and started playing an increasingly important role in China's economic growth.[2] Instead of government guarantees for housing and social services, China now has a rapidly expanding private market for housing, education, health care, and other services in the 1990s.

[TABLE 1 ABOUT HERE]

Behind the economic miracle is the rapidly rising inequality. As Column C of Table 1 shows, from example, 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), is particularly prominent: the urban-rural ratio in income per capita declined slightly in the early 1980s and but increased dramatically since then, from 2.51 in 1990 to 3.10 in 2000 and 3.22 in 2005 (Table 1: Column D). According to a recent report by the Chinese Academy of Social Sciences, rural-urban income inequality has contributed 43 percent to overall income inequality in China (Ming Pao Daily 2004).

Sociologists have been asking who wins and who loses in the course of institutional transition to capitalism (Nee 1989; Szelényi and Kostello 1996). While a large body of literature on market transition has been devoted to the discussion of the change in returns to human capital (education) as a result of the market transition (Bian and Logan 1996; Gerber and Hout 1998; Hauser and Xie 2005; Wu and Xie 2003; Xie and Hannum 1996; Zhou 2000), few scholars have explicitly examined the impact of economic reforms on educational attainment.

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[2] The private sector was elevated to the status equal to the state sector in 15th Congress of Chinese Communist Party in 1997, and endorsed in China's Constitution in 1999; and protection of private property was incorporated into the Constitution by a new amendment in 2004 (Lu 2004).

Compared to the change in economic realm, while the educational stratification is relatively stable, it is by no means immune to economic reform in China, particularly in the 1990s. Economic reforms affected educational stratification in three respects. First, the continuing economic growth demand for the better-trained labor force. The commencement of the reform era was marked by the complete dismantling of the educational policies during the Cultural Revolution, which severely condemned the system of evaluating student performance by examination (Tsui 1997; Wang 2002). Despite the fact that the pattern of educational attainment in China is found to vary across different historical periods associated with major shifts in government policies (Hannum and Xie 1994; Zhou, Moen, and Tuma 1998), the educational inequality observed in the 1980s after the Cultural Revolution was largely seen as reflecting a return to the generic practice under socialism (also see Gerber and Hout 1995; Simkus and Andorka 1982; Wong 1998), rather than the effect of market transition (Deng and Treiman 1997; Tsui 1997; Zhou, Moen, and Tuma 1998).

Second, the economic growth also afforded the Chinese government more resources to promote education. As Table 2 shows, the government budgetary expenditure on education has been increasing exponentially since 1978. The government in 1980 set the target of universal primary education by the end of the 1980s; and the nine-year free education became a fundamental state policy in the *Law on Compulsory Education in the People's Republic of China* (Tsui 1997). The goal has been largely achieved by 1998. Higher education has also been opening up since the end of the 1990s (ZJRWK 2003).

[TABLE 2 ABOUT HERE]

Third, while it was no doubt that the intention of the central government to expand educational opportunities for the citizens, agricultural de-collectivation and fiscal decline slowed

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down the progress. The replacement of the rural commune system with the household responsibility system opened up a gap with respect to the provision of such public goods as education and health service (as shown in the decline in school enrollment in the mid-1980s). Moreover, the financial reform in education aggravated the situation. In the context of decentralization in public finance in China since the early 1980s, the responsibility of funding basic education was shifted to local governments who had a strong incentive to invest in projects that can quickly earn profits and generate tax revenues, with a result of a low priority in investment on education. The uneven regional economic development further differentiated the local governments' capacity in funding basic education. In many poor and rural areas, local governments can hardly raise enough revenue to cover teachers' salaries, not to mention other non-teacher costs. In contrast, local governments in economically more advanced areas cab mobilized significantly more resources for education, from both government and non-government sources (Tseng and Ding 2005). This led to substantial disparities in per-student educational spending across areas and regions.

Hence, in the process of educational expansion, to accommodate the increasing enrollment and educational costs, schools have been allowed to charge tuitions and other fees, even for 9-year compulsory education. For example, in 1999, the surcharges and miscellaneous fees together account for 62 percent of all out-of-budgeted revenue for primary schools and 57 percent of that for lower-secondary schools (Tseng and Ding 2005: Table 5). Recent surveys conducted by sociologists in several rural areas show that currently Chinese farmers, whose annual per capita net income stood at a mere 3,200 yuan in 2005, have to pay about 800 yuan a year for a child's education in primary and lower secondary education . Excessive charges by the schools have become a major reason behind the increasing rural dropouts in recent years. The

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dropout ratio for rural primary and junior high schools in 2004 was 2.45 percent and 3.91 percent respectively. Schools beyond the compulsory levels charge even higher and economic considerations become more important in affecting school continuation decisions (Min and Wang 2006). Hence, such policy reforms have had important implications on how family socioeconomic backgrounds affect children's educational opportunities in the expanding school system. Educational affordability became one of the greatest public concerns (Kahn and Yardley 2004). Some reported the decline of students from disadvantaged family backgrounds in enrollment in selected elite universities (Min and Wang 2006).

SOCIAL DIFFERENTAITIONS IN ACCESS TO EDUCATION: RESEARCH HYPOTHESES

In the era of rapid educational expansion and economic marketization in the 1990s, how were the increasing educational opportunities distributed among different social groups? Based on the analyses of school enrollment and transitions in the population census data of China in 1990 and 2000, this paper aims to examine the recent trend in the impact of family backgrounds in educational opportunities in reform-era China.

In regard to the consequence of educational expansion in educational inequalities, early scholars argued that if school attendance rates increase over time, the inequalities in educational opportunity will decline steadily, because children from disadvantaged backgrounds can increase the attendance rates by more percentages than those from upper classes whose rates are already high (Boudon 1974). This prediction, however, has received little support by empirical evidence. Instead, linear regression analyses of educational attainment reveal that the effect of family

backgrounds have been stable over time in many industrialized countries (e. g., Featherman and Hauser 1978).

Mare (1980) distinguished the processes of selections and allocation of students from the expansion of the educational system per se, and proposed a logit model of change in inequality of educational opportunity whose parameters are not affected by the degree of educational expansion. Comparative studies of educational attainment in 13 industrialized societies have confirmed that the logit effects of social origins on educational transitions remain stable across cohorts, even in the context of a long-term educational expansion (except for Sweden and the Netherlands where the effects of father's occupation and education on the low and intermediate transition decline).[3] Even the radical social policies of the socialist states (Hungary, Czechoslovakia, and Poland) did not reduce the effect of social origin (Blossfeld and Shavit 1993).

Most relevant to Chinese educational inequality are the cases of former state socialist countries. Simkus and Andorka (1982) analyzed educational stratification in Hungary for the period from 1923 to 1973 and reported an actual decrease of social origins on the earlier transitions, accompanied by stable effects in the later transition. Similar results have been found in Czechoslovakia by Mateju (*op. cit.* Blossfeld and Shavit 1993). This suggests that institutional shift to state socialism immediately after the revolution, along with the educational expansion, did bring more equality in school transitions at lower levels (also see Russia in Gerber and Hout 1995) for some time, but later educational stratification resume to the normal order, in which family backgrounds exert stable influence, as found in other modern societies.

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[3] These countries include USA, West Germany, England, Wales, Italy, Switzerland, the Netherlands, Sweden, Japan and Taiwan, Poland, Hungary, and Czechoslovakia.

Most analysis of educational stratification under socialism is not covered to the era of market transition, in which the institutional mechanism of distributing educational resources is changed. Using the data collected in 1998, Gerber (2000) extended an earlier study of educational stratification in Russia (Gerber and Hout 1995) and reported that the political chaos and economic crisis in transition Russia increased the magnitude of origin-based inequalities in access to academic secondary schools for the cohorts who completed their education in the tumultuous late-Soviet and post-Soviet years, when school enrollment contracted.

In sum, evidence from all countries except for post-Soviet Russia demonstrate either the stable effect or declining effect (for some welfare states and state socialist countries) of family origins on educational attainment. Together with the post-Soviet Russia case, it suggests that the distribution of educational opportunity is more related to the rules that govern the educational selection than to the expansion of the education system per se. The former to a large extent is reflected in the broader inequality structure of a society. Unlike post-Soviet Russia's experience of enrollment contraction, the educational expansion in China in the 1990s may not lead to more educational equality. Instead, the rapid marketization of education and withdrawal of the state as the provider of education as public goods may lead to more inequality in access to enlarged educational pie. Hence, I hypothesize that *the effect of family background on educational opportunity increases over time in China. Educational expansion, if it has effect, only brings equality at low level of transition.*

Specifically, given the change of inequality structure in reform-era China described above, in the following analysis, I focus on the trend in the effects of household registration status and father's socioeconomic background on school enrollment/continuation and transitions from 1990 to 2000 for the young cohorts aged between 6 and 18 years old in respective years.

DATA, VARIABLES, AND METHODS

Data

As far as we know, no national survey data are available for young cohorts who completed

education in the period when China proceeded deeply into marketization, including the

marketization of the educational system. This paper analyzes a sample of micro-data from the

China population censuses in 1990 and 2000. The decennial census is a unique tool for the study

of social changes because it provides a rich set of data for detail analysis of social and

demographic groups. For the most part, the census employs a constant set of measures for each

decade, thereby avoiding the problem of confusing changes in the population in the way that the

population is measured (Mare 1995).

The inter-census analysis for specific cohort is more appropriate than inter-cohort

analysis of the snapshot census data to address the temporal trend. In China, many people did not

finish school at a typical age, and the schooling system has also been changing from time to time.

Hence, it remains unclear to what extent the cohort effect can represent the period effect (Zhou,

Moen and Tuma 1998). Furthermore, the census data contain no information on the respondents'

family origins when they were receiving education, thus multivariate analyses of social

inequality in educational attainment are limited (except for Deng and Treiman 1997).[4]

The 1990 census data include two variables on education: educational level and

enrollment status, which can be combined, together with age/cohort information, to define

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[4] Using the retrospective education history data can partially remedy these problems, but this
approach has its own weakness: personal recall errors are inevitable, particularly for those who
finished school earlier; the population change over time cannot be captured by the retrospective
samples; meanwhile, the sample size for the young cohorts whose education attainment is mostly
affected by the reforms is too small for analysis.

whether a person of certain ages (6-18) is enrolled in school or not. The questions on education in the 2000 census are slightly modified, but the variables are comparable to each other, and it is used as the main dependent variable in this research project.

From the variable "relationship to the household head," the children' father and mother can be identified, whose occupation and education can be matched to the children' individual records, and used as the main measures to family backgrounds. Other individual characteristics (gender, nationality) and household characteristics (*hukou* type) are also available for the multivariate analyses in both censuses.

The data sets analyzed here are the sub-sample (0.1%) from the micro-data of population censuses in China in both 1990 and 2000. I first extracted those who aged between 6 and 24, and then match with their parents or household head if their parents are absent, based on the variable indicating the relationship of the respondent to the household. As a result, I was able to obtain children-parent (or pseudo-parent) records, as well as the household records including geographic location, household registration (*hukou*) status, father's education and occupation, gender, and ethnicity.

Variables

The dependent variable is the enrollment status and transition at certain ages, which is coded as a dummy variable. Given the fact that the primary school education is almost saturated in both rural and urban China, we will focus on the determinations of enrollment status at secondary school (junior high school and senior high school). While tertiary enrollment is of great interest, family background information for most tertiary students are not available from census data

because most of college students have moved out of their parents' households and lived in student dormitories where their universities are located.

In addition to school enrollment rate, I also look at the transition rate at two specific levels, from primary to junior high school, and from junior high school to senior high school. From 1990 to 2000, the Chinese school system remains largely the same. As Figure 1 shows, typically, a student starts school at age 7, proceeds to junior high school at 13 after 6 years of primary school, and then proceeds to senior high school/vocational school at age 16. Because there is no information for a particular grade that a student is attending, I approximate the transition rate at specific levels by referring to respondents' age. For the transition to junior high school, it is define as those aged between 13 and 15 still enrolled in school divided by those of the same age group who have completed primary school education. For the transition to senior high school (continuing school after compulsory education), it is define as those aged between 16 and 18 still enrolled in school divided by those of the same age group who have completed junior high school education.

The main independent variables of our research interests are family background, measured by father's occupation, education, and mother's education. Father's occupation is coded into socioeconomic status scale, a continuous variable. To make the measurement consistent, I first convert the Chinese standard classification of occupation to international standard classification of occupations (1968 version), and then map them to international socioeconomic index (Ganzeboom, de Graaf and Treiman 1992). Father's education and mother's education are measured in three levels (1=primary school; 2=junior high school; 3=senior high school or above). They are treated as a set of dummy variables in multivariate analysis.

In addition, the household registration status captures family backgrounds on the one hand but also the regional inequality reflecting the fundamental divide in the country (Wu and Treiman 2004; Wu and Treiman forthcoming). *Hukou* type refers to whether one holds agricultural (rural) or non-agricultural (urban) hukou. It is coded as a dummy variable (rural=1 and urban=0).

To capture regional variations in socioeconomic development, all 31 province-level jurisdictions in China are grouped into three regions based on their levels of economic development: 1= East; 2=Middle; and 3=West. The eastern region includes Liaoning, Beijing, Tianjin, Hebei, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, and Hainan. The middle region covers Heilongjiang, Jilin, Inner Mongolia, Shanxi, Henan, Anhui, Hubei, Hunan, Jiangxi, and Guangxi; and the rest provinces belong to the western region. There exist great disparities in the level of economic and social development as well as education among the three geographic regions. I also compile county-level statistics on GDP per capita in both 1990 and 2000 and educational expenditure in 2000.

In addition to geographic region, I code the type of residential place into a dummy variable (rural=1 and urban=0). Gender, age, and ethnicity are controlled variables. Gender is a dummy variable (boy=1 and girl=0). Nationality as a control variable is also coded a dummy variable (Han Chinese =1 and the other minorities=0) (Hannum 2004).

Methods

To model the probability of enrollment, omitting subscripts denoting the *i*th person of *j*th birth cohort in *t* period (census year), a general model is specified as

$$\ln\left(\frac{p}{1-p}\right) = \alpha + \beta' X ,$$

where p is the probability of being enrolled in school of certain level/age range, X is the vector

of independent variables measuring family backgrounds (more control variables are to be added

as necessary), and β' is the vector of estimated coefficients. Note that in this specification β is

estimated separately for each cohort in each of the two periods. To examine the temporal trend,

this model can be expressed equivalently as

$$\ln\left(\frac{p}{1-p}\right) = \alpha + \beta^{*'} X + \delta' S$$

where S=tX, t is s scalar dummy variable (2000=1), and δ is a vector of parameters representing

the interaction effects between family background variables and time (t) (Wooldridge 2003,

Chapter 13).

Because the sample was clustered within city districts/counties, an adjustment of standard

errors is needed in regression analyses. All the models reported were estimated using Stata 9.2,

with robust standard errors corrected for clustering on sampling units (districts/counties) (Stata

Corporation. 2001).

DESCRIPTIVE STATISTICS

Figure 1 plots age-specific enrollment rates in China from 6 to 24 in 1990 and 2000 respectively.

Except for 6-7 years old, the enrollment rate at age 12 or below was quite high in 1990 and

almost reached saturation in 2000, which are consistent with the statistics from the Ministry of

Education presented in Table 1, although the latter may be over-reported. This evidence suggests

that enrollment in primary school has almost been saturated since 1990. From age 13 to 15 (typically at junior high school), the rate dropped from 81.7 percent to 54.4 percent in 1990 and from 94.4 percent to 75.4 percent, which indicates the successful expansion of compulsory education at lower secondary level. From age 16 to 18 (typically upper secondary level), the rate dropped further from 38.9 percent to 16.9 percent in 1990, and 58.9 percent to 24.1 percent in 2000. Compared the statistics of the two years, there is a significant increase in enrollment rates within the decade, thanks to the implementation of the 9-year compulsory education law in the 1990s.

[FIGURE 1 ABOUT HERE]

Table 3 presents descriptive statistics for those aged between 6 and 18. The rate of full-time school attendance increased from 64.9 percent in 1990 to 82.5 percent in 2000. Gender and age structure, ethnic composition, and residence remain largely the same between the two samples. However, while the father's occupational status index has little change, both father's and mother's education have improved significantly. For example, fathers who have junior school education or above increased from 40 percent in 1990 to 65 percent in 2000; mothers who have junior high school education increased from 20 percent to 44 percent within the decade.

In the bottom of Table 3, I calculate the rate of transition to junior high school given the completion of elementary school for the cohort aged between 13 -15 and the rate of transition to senior high school given the completion of junior high school for the cohort aged between 16-18 in respective years. The rate of transition to junior high school in both 1990 and 2000 are quite close what are reported in government statistics in Table 2 (75.9 percent vs. 74.6 percent in 1990 and 93.2 percent vs. 94.9 percent in 2000); whereas the rate of school advancement beyond compulsory level are much lower than those reported in government statistics (31 percent vs. 41

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percent in 1990 and 41 percent vs. 51 percent in 2000). Although the two ways of calculations

are not identical thus not strictly comparable, the discrepancy confirms that the official net

enrollment rate overestimates students actually attending classes because it only records

enrollment at the beginning of the school year (Tsui 1997).

[TABLE 3 ABOUT HERE]

In the following, I first examine the effect of family background on the enrollment status

for children aged 6-18, who mostly live with their parents. I then proceed to analyze the school

transition for those between 13 and 15 (to junior high school) and those between 16 and 18 (to

senior high school), separated by urban and rural samples. Special attention will be paid to the

changing role of *hukou* status, and father's socioeconomic status in affecting the status of

enrollment and the likelihood of school transition within the decades. Finally, I analyze the

school transition in rural areas taking into account of county statistics on economic development

and educational expenditure.

EMPIRICAL FINDINGS IN MULTIVARIATE ANALYSIS

Table 4 presents the results from logistic regression predicting the likelihood of enrollment in

school for all children aged 6-18 in 1990 and 2000. I include a dummy variable year 2000 to

capture the increase in enrollment rate in the 2000, gender, region, *hukou* status, residential place

in Model 1. Then I add father's occupation and education, mother's education in Model 2.

Finally, I add an interaction between the *hukou* status and father's occupation with the year 2000

dummy to test whether the effects have changed over the decade.

[TABLE 4 ABOUT HERE]

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Not surprisingly, year, sex, ethnicity, *hukou* status, residential place, region, and are all significant predictors of enrollment stratus, and so are family background variables. Children whose father holds a high-status job and whose parents are more educated are more likely to be enrolled in school.

The interaction terms in Model 3 indicate that, despite the significant improvement in school enrollment within the decade, the effect of father's socioeconomic status on the likelihood of school enrollment becomes even stronger in 2000 than in 1990, and the change is statistically significant ($p<.05$). Moreover, children of rural *hukou* status have become even more disadvantaged from 1990 to 2000, as indicated by the negative coefficient of the interaction term. Other things being equal, the odds of being enrollment in school for rural *hukou* holders are 86 percent ($e^{-0.155}$) of those for urban *hukou* holders in 1990; such figure decreased to 73 percent ($e^{-0.155-0.160}$) in 2000.

Because the descriptive statistics in Table 2 and Figure 1 suggests that enrollment in primary school has almost been saturated in the 1990s as a result of implementation of the compulsory education in China, to specifically look at the social differentials in school attendance, I present school transition models for those aged between 13 and 15 in Table 5, with the same independent variables and modeling strategies as those in Table 4, but separated by urban and rural areas.

[TABLE 5 ABOUT HERE]

Results show that the patterns are quite similar to those previously observed in Table 4, except that for the changing role of father's socioeconomic status and *hukou* status. In both rural and urban areas, father's socioeconomic status has significant impact on the likelihood of transition to junior high school given one has completed primary school education, but there

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seems no significant change between 1990 and 2000. Children of rural *hukou* status, on the other hand, indeed have gained more advantages, given their low starting point. This pattern reflects that the expansion of education, in particular, compulsory education, has benefited rural children and overcome their disadvantages compared to urban children. Educational expansion has reduced urban-rural inequality at low level but not the inequality associated with family socioeconomic backgrounds.

Table 6 presents the school transition models for those aged between 16 and 18 (high level) who have completed junior school education. The stories shown are quite different from the early transition. In urban areas, father's socioeconomic status still plays an important role, but the effect remains the same from 1990 to 2000. For children of rural *hukou* status, their disadvantage in making transition to senior high school becomes enhanced. In other words, in Chinese cities, people with rural *hukou* status (namely, the rural migrants who are denied citizens; rights) faced significant disadvantages in entering senior high school after completing junior high school education, compared to those with urban permanent *hukou* status. The situation becomes even worse in 2000 than in 1990, given the surging wave of migration from rural areas (Liang and Ma 2004).

[TABLE 6 ABOUT HERE]

In rural areas, the scenario is quite different. Father's socioeconomic status is still a significant predictor of the likelihood of transition to senior high school and the effect becomes even stronger in 2000 than in 1990. For rural *hukou* holders within rural areas, their situation becomes much worse in 2000 than in 1990. Therefore, thanks to the successful implementation of the 9-year compulsory education in China in the 1990s, despite the fact that the educational expansion has benefited children of rural *hukou* at lower secondary education, the family

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backgrounds and registration status play an even greater role in receiving further education beyond the compulsory level, especially in rural areas.

Does this reflect the uneven regional economic development in rural China? In Table 7, I control local economic development level, measured by (logged) GDP per capita of the county in two years. Results show that local economic development does play an important role in determining school attendance: children in more developed counties have more educational opportunity. Even net of the regional effect, father's socioeconomic status and family's *hukou* status on school transition continue to affect school transition rates, and these effects, while unchanged on the transition to junior high school, have become even greater in 2000 than in 1990 in favor of those who are at advantaged status, namely, those who have high-status father and who hold urban *hukou* status. Education inequality in upper secondary level is enlarged within the decade.

[TABLE 7 ABOUT HERE]

Local per capita GDP may not capture the exact amount of resources spent on education. Two county-level indicators – education spending per student and the percent of educational surcharge in per capita income – are available only for the year 2000. They are included in the models of Table 8, which predicts school transitions in rural China in 2000. As shown in the models, both are significant predictors of school transition rates but again, the effects of family backgrounds and *hukou* status persist.

[TABLE 8 ABOUT HERE]

SUMMARY AND CONCLUSIONS

To summarize, in this paper I examined the trend in educational stratification during China's economic reforms in the 1990s. Based on the samples of population census data in 1990 and 2000, I matched the school-age children to their parents' background information within the same households and investigate the effects of family background on children's school enrollment and transitions. Results show that, despite the substantial expansion of educational opportunities within the decade, family backgrounds continue to play an important role in determining school enrollment status and school transitions. Over the decade, children of rural *hukou* status have become even more disadvantaged compared to their urban counterparts and the effect of father's socioeconomic status on school enrollment has been enhanced. While children of rural *hukou* status have gained more opportunities at junior high school level as a result of saturation in 9-year compulsory education in the nation, rural-urban gap in the likelihood of transition to senior high school level has been enlarged and the effect of father's socioeconomic status on the transition rate increased, even after controlling for the regional variations in economic development.

Hence, educational expansion in China, accompanied by the rapid marketization in the 1990s did not bring more equal access to educational opportunities among different social strata. Instead, the distribution of educational opportunity seems to have exacerbated in the context of introduction of the market into the education sphere and rising inequality in the distribution of economic resources. The change in educational inequality to large extent imitates the change in the overall structure of inequality in reform-era China in the 1990s.

The evidence of China offers another case consistent with the thesis of "maximally maintained inequality" (Raftery and Hout 1993), which argues that inequality in educational

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opportunity is maximally maintained, namely, in modern societies, the effect of social origin at all levels of education do not change, except when the enrollment of the advantaged groups is already so high at a given level that further expansion is only feasible by increasing the opportunity of disadvantaged groups to make the transitions. The implications of my findings in this paper may go beyond the thesis of maximally maintained inequality. While the thesis predicts that educational expansion does not lead to better chances for disadvantaged groups to make transition and will not change the association between family backgrounds and the given level of school transitions, my analysis has demonstrated that the effects of family backgrounds have increased (rather than remained constant and decreased conditionally), and educational opportunities of the disadvantaged groups have been even squeezed in 2001.

What are the implications of these findings for the change in social stratification order and the evolution of social structure in China? While data do not allow us to examine the trend in attendance rates of children from different social backgrounds, one can reasonably speculate that the expansion of high education in the late 1990s will largely benefit urban children and children from better-off families, further increasing educational inequality at higher levels (Min and Wang 2006).[5] The rising educational inequality among students of different socioeconomic backgrounds in the 1990s could lead to increasing earnings inequality after they complete education and enter the labor markets. In a long run, intergenerational transmission is enhanced in the course of the transition (as observed in post-Soviet Russia by Gerber and Hout 2004); the role of education as an important channel for socioeconomic mobility is weakened. Future

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[5] There were 2.04 million full-time students enrolled in colleges in 1991; the enrollment increased to 5.56 million in 2000 and 12 million in 2003. Also see the transition rate to tertiary school in Table 2 of this paper.

research should be devoted to assessing the far-reaching social consequences of rising

educational inequality.

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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 [a] 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/

C: World Income Inequality Database http://www.wider.unu.edu/wiid/wiid-introduction-2004-1.htm

Table 2. Government Educational Spending and Educational Expansion in China, 1980-1998

Year	Government Budgetary 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	95.5	87.7	40.9	-
1979	93.16	93.0	82.8	40.0	-
1980	113.19	93.9	75.9	45.9	-
1981	122.22	93.0	68.3	31.5	-
1982	137.20	93.2	66.2	32.3	-
1983	154.72	94.0	67.3	35.5	-
1984	180.14	95.3	66.2	38.4	-
1985	224.89	96.0	68.4	41.7	-
1986	267.30	96.4	69.5	40.6	-
1987	276.57	97.2	69.1	39.1	-
1988	330.91	97.2	70.4	38.0	-
1989	397.72	97.4	71.5	38.3	-
1990	**563.99**	**97.8**	**74.6**	**40.6**	**27.3**
1991	617.83	97.8	75.7	42.6	28.7
1992	728.76	97.2	79.7	43.4	34.9
1993	867.76	97.7	81.8	44.1	43.3
1994	1174.74	98.4	86.6	46.4	46.7
1995	1411.52	98.5	90.8	48.3	49.9
1996	1671.70	98.8	92.6	48.8	51.0
1997	1862.55	98.9	93.7	44.3	48.6
1998	2032.45	98.9	94.3	50.7	46.1
1999	2287.18	99.1	94.4	50.0	63.8
2000	**2562.61**	**99.1**	**94.9**	**51.1**	**73.2**
2001	3057.01	98.3	95.5	52.9	78.8
2002	3491.40	98.6	97.0	58.3	83.5
2003	3850.62	98.7	97.9	60.2	83.4
2004	4465.86	98.9	98.1	62.9	82.5
2005	-	99.2	98.4	69.7	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/

Table 3: Descriptive Statistics of School-Age Children (6-18) in China, 1990 and 2000

Variables	1990	2000
Full-time enrolled in school (yes=1)	0.649	0.825
Sex (female=1)	0.485	0.472
Age	12.20	11.92
	(S.D.=3.80)	(S.D.=3.45)
Region		
East	0.335	0.364
Middle	0.438	0.403
West	0.227	0.232
Ethnicity (Han=1)	0.905	0.897
Hukou (rural=1)	0.842	0.818
Residential (county=1)	0.689	0.709
Father's ISEI	24.18	24.12
	(S.D.=15.32)	(S.D.=14.01)
Father's schooling		
Less than Elementary school	0.147	0.041
Elementary school	0.451	0.302
Junior high school	0.288	0.472
Senior high school or above	0.115	0.184
Mother's schooling		
Less than Elementary school	0.380	0.128
Elementary school	0.414	0.420
Junior high school	0.150	0.343
Senior high school or above	0.057	0.109
Number of cases	290,860	289,769
Advance to junior high school given the	0.759	0.932
completion of elementary school (aged 13-15)	(N=37,406)	(N=58,611)
Advance to senior high school given the	0.305	0.410
completion of junior high school (aged 16-18)	(N=27,686)	(N=33,977)

Sources: 0.1 % micro-data of 1990 and 2000 censuses

Table 4: Logistic Model Predicting Full-time School Enrollment for Those Aged 6-18, 1990 and 2000

Variables	Model 1	Model 2	Model 3
Year of 2000	0.945**	0.626**	0.735**
	(0.007)	(0.008)	(0.042)
female	-0.256**	-0.276**	-0.276**
	(0.007)	(0.008)	(0.008)
Hukou (rural=1)	-0.678**	-0.212**	-0.155**
	(0.014)	(0.018)	(0.024)
Region [a]			
Middle	-0.159**	-0.122**	-0.120**
	(0.008)	(0.009)	(0.009)
West	-0.344**	-0.154**	-0.151**
	(0.009)	(0.010)	(0.010)
Ethnicity (Han=1)	0.395**	0.272**	0.270**
	(0.011)	(0.012)	(0.012)
Residence (rural area=1)	-0.138**	-0.065**	-0.063**
	(0.010)	(0.011)	(0.011)
Father's schooling [b]			
Elementary school		0.413**	0.415**
		(0.014)	(0.014)
Junior high school		0.724**	0.729**
		(0.015)	(0.016)
Senior high school or above		0.767**	0.765**
		(0.020)	(0.020)
Mother's schooling [c]			
Elementary school		0.370**	0.374**
		(0.010)	(0.010)
Junior high school		0.662**	0.667**
		(0.014)	(0.014)
Senior high school or above		0.663**	0.651**
		(0.023)	(0.023)
Father's socioeconomic index (ISEI)		0.007**	0.007**
		(0.000)	(0.000)
Father's ISEI * year of 2000			0.002*
			(0.001)
Rural hukou * year 2000			-0.160**
			(0.033)
Constant	1.216**	-0.053	-0.101**
	(0.017)	(0.028)	(0.033)
Pseudo R^2	0.057	0.078	0.078
Observations	579546	477605	477605

Notes: a. East region as the reference; b, c. Less than elementary school as the reference Robust standard errors in parentheses; * significant at 5%; ** significant at 1%

Table 5: Logit Models Predicting Transition to Junior High School Given the Completion of Elementary School (for Those Aged 13-15), 1990 and 2000

	Urban			Rural		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Year of 2000	1.711**	1.270**	0.692*	1.654**	1.331**	0.578
	(0.061)	(0.075)	(0.297)	(0.025)	(0.030)	(0.366)
Female	-0.435**	-0.491**	-0.492**	-0.667**	-0.762**	-0.762**
	(0.056)	(0.065)	(0.065)	(0.024)	(0.028)	(0.028)
Hukou (rural=1)	-1.987**	-1.178**	-1.310**	-2.141**	-1.242**	-1.537**
	(0.076)	(0.107)	(0.128)	(0.135)	(0.178)	(0.246)
Region [a]						
Middle	-0.361**	-0.279**	-0.279**	-0.451**	-0.396**	-0.396**
	(0.066)	(0.075)	(0.075)	(0.030)	(0.034)	(0.034)
West	-0.656**	-0.508**	-0.512**	-0.826**	-0.645**	-0.644**
	(0.073)	(0.085)	(0.085)	(0.032)	(0.037)	(0.037)
Ethnicity (Han=1)	0.426**	0.297**	0.298**	0.650**	0.577**	0.578**
	(0.102)	(0.112)	(0.113)	(0.039)	(0.044)	(0.044)
Father's schooling [b]						
elementary school		0.227	0.228		0.304**	0.304**
		(0.118)	(0.119)		(0.048)	(0.048)
junior high school		0.739**	0.741**		0.805**	0.806**
		(0.129)	(0.130)		(0.053)	(0.053)
senior high school or above		0.967**	0.987**		1.137**	1.137**
		(0.177)	(0.180)		(0.080)	(0.080)
Mother's schooling [c]						
Elementary school		0.343**	0.337**		0.297**	0.297**
		(0.086)	(0.086)		(0.033)	(0.033)
Junior high school		0.964**	0.953**		1.052**	1.051**
		(0.119)	(0.120)		(0.053)	(0.053)
Senior high school or above		0.859**	0.896**		1.398**	1.396**
		(0.192)	(0.195)		(0.138)	(0.138)
Father's ISEI		0.020**	0.019**		0.032**	0.031**
		(0.003)	(0.003)		(0.002)	(0.002)
Father's ISEI * year 2000			0.005			0.004
			(0.006)			(0.004)
Rural hukou * year 2000			0.543**			0.690*
			(0.209)			(0.348)
Constant	3.404**	1.531**	1.679**	3.013**	0.838**	1.148**
	(0.130)	(0.205)	(0.223)	(0.140)	(0.197)	(0.264)
Pseudo R^2	0.185	0.229	0.230	0.131	0.192	0.192
Observations	32856	25404	25404	63123	52637	52637

Note: a. East region as the reference; b, c. Less than elementary school as the reference; Robust standard errors in parentheses; * significant at 5%; ** significant at 1%

Table 6: Logit Models Predicting Transition to Senior High School Given the Completion of Junior High School (for those aged 16-18), 1990 and 2000

Variables	Urban			Rural		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Year of 2000	1.010**	0.817**	0.805**	0.478**	0.379**	0.863**
	(0.034)	(0.045)	(0.136)	(0.029)	(0.037)	(0.179)
Female	-0.014	-0.047	-0.045	-0.322**	-0.378**	-0.375**
	(0.033)	(0.041)	(0.041)	(0.028)	(0.032)	(0.032)
Hukou (rural=1)	-2.077**	-1.411**	-1.183**	-1.614**	-1.075**	-0.672**
	(0.034)	(0.048)	(0.072)	(0.056)	(0.075)	(0.132)
Region [a]						
Middle	-0.433**	-0.414**	-0.402**	-0.151**	-0.155**	-0.147**
	(0.037)	(0.046)	(0.046)	(0.031)	(0.035)	(0.035)
West	-0.138**	-0.048	-0.042	-0.011	0.084	0.091*
	(0.046)	(0.059)	(0.059)	(0.039)	(0.044)	(0.044)
Ethnicity (Han=1)	-0.020	-0.047	-0.062	0.212**	0.184**	0.171**
	(0.076)	(0.098)	(0.099)	(0.055)	(0.063)	(0.063)
Father's schooling [b]						
Elementary school		0.343*	0.356**		0.250**	0.266**
		(0.138)	(0.136)		(0.083)	(0.083)
Junior high school		0.494**	0.512**		0.405**	0.435**
		(0.140)	(0.138)		(0.085)	(0.085)
Senior high or above		0.960**	0.986**		0.802**	0.829**
		(0.145)	(0.144)		(0.093)	(0.093)
Mother's schooling [c]						
Elementary school		0.066	0.106		0.056	0.072
		(0.077)	(0.076)		(0.046)	(0.045)
Junior high school		0.323**	0.356**		0.245**	0.257**
		(0.081)	(0.081)		(0.054)	(0.054)
Senior high or above		1.045**	1.052**		0.883**	0.880**
		(0.093)	(0.093)		(0.081)	(0.081)
Father's ISEI		0.021**	0.019**		0.020**	0.017**
		(0.001)	(0.002)		(0.001)	(0.002)
Father's ISEI * year 2000			0.005			0.008**
			(0.003)			(0.002)
Rural hukou * year 2000			-0.420**			-0.718**
			(0.094)			(0.161)
Constant	0.777**	-1.004**	-1.053**	-0.084	-1.511**	-1.821**
	(0.083)	(0.172)	(0.180)	(0.079)	(0.127)	(0.172)
Pseudo R^2	0.184	0.248	0.250	0.036	0.068	0.069
Observations	26121	19142	19142	35505	29575	29575

Note: a. East region as the reference. b, c. Less than elementary school as the reference;
    Robust standard errors in parentheses
    * significant at 5%; ** significant at 1%

Table 7: Logit Model Predicting School Transitions for Those Living in Rural Areas (Counties), 1990 and 2000

Variables	Transition to Junior High			Transition to Senior High		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Year of 2000	0.761**	0.589**	-0.087	0.266**	0.173**	0.650**
	(0.037)	(0.042)	(0.404)	(0.043)	(0.051)	(0.198)
Female	-0.673**	-0.759**	-0.758**	-0.330**	-0.383**	-0.381**
	(0.026)	(0.030)	(0.030)	(0.031)	(0.036)	(0.036)
Hukou (rural=1)	-2.101**	-1.254**	-1.483**	-1.577**	-1.049**	-0.707**
	(0.143)	(0.193)	(0.250)	(0.063)	(0.085)	(0.137)
Ethnicity (Han=1)	0.530**	0.467**	0.468**	0.109	0.053	0.043
	(0.042)	(0.046)	(0.046)	(0.057)	(0.066)	(0.066)
Per capital GDP of the county	0.750**	0.637**	0.636**	0.144**	0.128**	0.128**
	(0.025)	(0.028)	(0.028)	(0.028)	(0.032)	(0.032)
Father's schooling [a]						
Elementary school		0.299**	0.299**		0.271**	0.284**
		(0.050)	(0.050)		(0.090)	(0.090)
Junior high school		0.808**	0.809**		0.433**	0.457**
		(0.056)	(0.056)		(0.093)	(0.093)
Senior high or above		1.190**	1.190**		0.836**	0.855**
		(0.086)	(0.086)		(0.103)	(0.103)
Mother's schooling [b]						
Elementary school		0.241**	0.241**		0.048	0.062
		(0.035)	(0.035)		(0.051)	(0.051)
Junior high school		0.941**	0.940**		0.252**	0.265**
		(0.058)	(0.058)		(0.060)	(0.060)
Senior high or above		1.389**	1.388**		0.862**	0.859**
		(0.158)	(0.158)		(0.093)	(0.094)
Father's ISEI		0.029**	0.028**		0.018**	0.016**
		(0.002)	(0.002)		(0.001)	(0.002)
Father's ISEI * year 2000			0.003			0.007**
			(0.005)			(0.003)
Rural hukou * year 2000			0.623			-0.693**
			(0.384)			(0.177)
Constant	-2.736**	-3.886**	-3.643**	-1.157**	-2.394**	-2.664**
	(0.225)	(0.280)	(0.325)	(0.214)	(0.263)	(0.286)
Pseudo R^2	0.137	0.192	0.192	0.033	0.064	0.065
Observations	51561	42888	42888	29575	24505	24505

Note: a, b. Less than elementary school as the reference;
       Robust standard errors in parentheses
       * significant at 5%; ** significant at 1%

Table 8: Logit Model Predicting School Transitions for Those Living in Rural Areas, Controlling for County Educational Expenditure, 2000

Variables	Transition to Junior High School		Transition to Senior High School	
	Model 1	Model 2	Model 3	Model 4
Female	-0.597**	-0.593**	-0.326**	-0.324**
	(0.051)	(0.053)	(0.043)	(0.044)
Hukou (rural=1)	-0.762**	-0.779**	-1.428**	-1.387**
	(0.278)	(0.302)	(0.115)	(0.118)
Ethnicity (Han=1)	0.837**	0.797**	0.211*	0.176*
	(0.074)	(0.078)	(0.082)	(0.087)
Father's schooling [a]				
Elementary school	0.177	0.145	0.122	0.036
	(0.099)	(0.109)	(0.157)	(0.168)
Junior high school	0.669**	0.648**	0.272	0.249
	(0.105)	(0.116)	(0.158)	(0.168)
Senior high or above	1.088**	1.110**	0.677**	0.682**
	(0.143)	(0.157)	(0.162)	(0.174)
Mother's schooling [b]				
Elementary school	0.503**	0.467**	-0.004	-0.036
	(0.066)	(0.070)	(0.077)	(0.080)
Junior high school	1.356**	1.264**	0.258**	0.249**
	(0.095)	(0.100)	(0.085)	(0.088)
Senior high or above	1.894**	1.826**	0.767**	0.707**
	(0.225)	(0.235)	(0.112)	(0.117)
Father's ISEI	0.040**	0.035**	0.026**	0.023**
	(0.005)	(0.005)	(0.002)	(0.002)
Education spending per capita (logged)		0.502**		0.584**
		(0.126)		(0.096)
% surcharge in per capita income(logged)		0.073*		0.065*
		(0.034)		(0.032)
Constant	0.770*	-1.431*	-0.887**	-3.637**
	(0.317)	(0.704)	(0.201)	(0.544)
Pseudo R^2	0.108	0.108	0.069	0.069
Observations	24627	22837	13457	12569

Notes: a, b. Less than elementary school as the reference; Robust standard errors in parentheses;
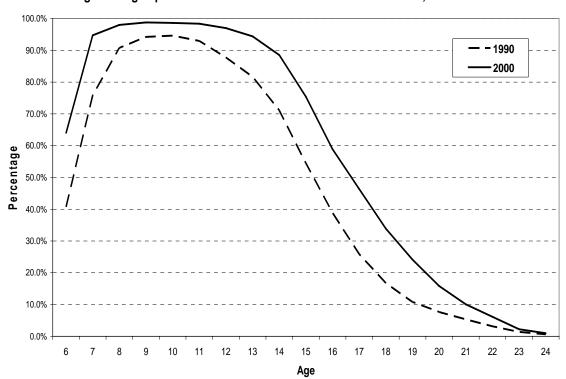* significant at 5%; ** significant at 1%

Figure 1. Age Specific Full-time School Enrollment Rates in China, 1990 and 2000

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