

## Trends in Educational Attainment in China

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*Abstract: Trends in educational attainment in China over the twentieth century are studied using data from all the Chinese censuses conducted since 1982. There was a marked increase in educational attainment over time, with deviations from a smooth upward trend only among those who came of age during the Great Leap Forward, which was detrimental to education, and the Cultural Revolution, which resulted in educational expansion that subsequently was dismantled. The upward trend was mainly fueled by the expansion of primary and lower middle education, resulting in a nearly complete gender convergence, as women went from virtually no schooling at the beginning of the century to nearly universal primary matriculation by the end of the century. The gender gap also closed at higher levels of schooling.*

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This article is a revised version of presentations at a 2010 RC28 meeting in Haifa, a 2010 conference at the University of California, Davis, and at seminars in 2011 at Columbia University and Yale University and in 2012 at the University of California, Berkeley and at the National University of Singapore. Preparation of the paper entailed the use of facilities and resources at the California Center for Population Research, UCLA, which is supported by infrastructure grant R24HD041022 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, and those of the Asia Research Institute of the National University of Singapore. The two sample surveys analyzed in the paper were conducted using funds from grants to UCLA from the National Science Foundation (SBR-9423453, 0551279), the Ford Foundation-Beijing, and the Luce Foundation. Data from the 1982 and 1990 censuses of China were obtained from IPUMS-International, which also is supported by funds from NICHD.

Many seminar participants provided helpful comments in response to various presentations of the material in this article, particularly Deborah Davis, Yongtao Du, Christian Karlsson, William Parish, and Yu Xie. I especially want to thank Hua Ye for help in locating Chinese statistical materials as well as providing useful comments and Shige Song for pointing me to information on the consequences of the Great Leap Forward.

In common with most nations in the world (Benavot and Riddle 1988; Ganzeboom and Treiman 1993, Figure 2a; Ganzeboom et al. 2003; Treiman et al. 1998), the educational attainment of the Chinese population, especially Chinese women, has increased dramatically over the twentieth century. At the beginning of the century only about 25 percent of men and almost no women had any schooling at all, while by the end of the century, primary school education was nearly universal for both men and women.

Although the broad outlines of China's educational expansion are clear, many details remain unknown. For example, was the expansion steady, driven by its own dynamic, or was it sporadic, depending on particular policies or historical events? There is clear evidence of vacillation in educational policies between promoting equality of educational opportunity and promoting meritocratic selection in the service of economic development (Deng and Treiman 1997; Glassman 1981, 138; Lu and Treiman 2008), but it is not clear whether or in what way such policy shifts affected the overall level of educational attainment. Finally, was the expansion mainly at the bottom—an increase in the number of children attending school at all—or was it mainly at the top—an increase in the number of children getting upper middle or tertiary education? To answer these questions, I present data from each of the modern Chinese censuses—those conducted in 1982, 1990, 2000, and 2010, and the 1-percent sample census conducted in 2005. Using these data, I describe, separately for males and females, trends in the proportion of the Chinese population attaining various levels of education over the course of the twentieth century.<sup>1</sup>

### **Trends in Educational Attainment**

One of the great social inventions of the nineteenth century was mass public education. Concomitant with the Industrial Revolution came recognition that a literate and numerate population was a more productive population (Harbison and Myers 1964). As the competitive advantage of education became increasingly evident, nations around the world, industrialized and nonindustrialized alike, began to expand educational opportunities for their citizens (Ramirez and Boli 1987). Primary schools, often free or entailing little cost to the families of pupils, were established in all but the smallest and most remote locales, and the availability of secondary and tertiary institutions expanded as well. Moreover, families increasingly saw the value of education as a vehicle for upward mobility and demanded access to schooling for their children (Abernethy 1969).

However, the typical pattern of expansion remains unclear. Did primary schools expand first, followed later by expansion of secondary schooling and still later by expansion of tertiary schooling; did the average level of schooling increase due to the expansion of secondary or tertiary schooling; or did still some other pattern predominate? Schofer and Meyer (2005) show that during the period 1950–70 the expansion of higher education outpaced that of other levels throughout the world,

except in the communist nations of Eastern Europe. They argue that the Eastern European anomaly resulted from policies designed to protect working class interests and ideology. An alternative argument, which applies more to China than to Eastern Europe, is that where centralized state control is strong, it is possible to resist consumerist pressures to expand education at the top and instead to concentrate resources on raising the floor, ensuring that the entire population gains literacy—which not only enhances productivity but also is a vehicle for social control. Thus, a central question is which sort of policy did China follow at various points in its modern history.

The current Chinese educational system is broadly similar to that in the United States, with six years of primary school followed by three years of lower middle school, three years of upper middle school—usually academic but sometimes vocational in orientation—and then tertiary education, which may be either “short cycle” technical training generally lasting two or three years or four year university education, sometimes followed by postgraduate education.<sup>2</sup> However, as Tables 1 and 2 make clear, the Chinese system is much more selective than that of, say, the United States, with many more people dropping out at each step.<sup>3</sup>

Unit-record data for 1-percent samples from the 1982 and 1990 censuses of China are available in electronic form from the Minnesota Population Center (<http://international.ipums.org/international/>) and a 1:1,000 (“1pk”) sample of the 2000 census data has been made available to the author. Tabulations of the level of education by single years of age have been published from the 2000 and 2010 censuses and the 2005 1-percent sample census (China National Bureau of Statistics 2007, Table 4-1; China Population Census Office 2002, Vol. 1, Table 4-1; China Population Census Office 2012, Vol. 1, Table 4-1). Together, these data sets provide the best information on trends in schooling since they are large enough to permit reliable estimates for single-year cohorts. I present results for the 2000 census from both the 1pk file of individual records and from the published education-by-age tabulation. The 1pk file allows a distinction between complete and incomplete education, while estimates from the published table, albeit less detailed, are much more precise because they are based on the entire population. They also are the definitive estimates provided by the Chinese National Bureau of Statistics.

Unfortunately, the response categories for levels of education differ somewhat across the five census files, making it difficult to create a single time series. Tables 1 and 2 show the distribution of educational attainment, for males and females respectively, using the most detailed categories available for each year. Inspecting the tables, two things are evident. First, the level of education of the population has been increasing over time, although the rate of change is confounded by the fact that the figures in the tables reflect both cohort-by-cohort increases in schooling and changes in the age distribution as China has become an increasingly elderly society. Second, most of those who matriculate also graduate, which means that it is reasonable to convert educational levels into years of schooling by using the typical number of years required to complete a level.

Table 1

Percentage Distribution of Levels of Education, Chinese Males Age 20 and Older, from Five Chinese Censuses

	1982 census	1990 census	2000 census (1pk file)	2000 census (table)	2005 1%— sample census	2010 census
No schooling	27.6 <sup>a</sup>	17.2 <sup>a</sup>	6.0	5.7	7.4	3.5
Literacy training	—	—	1.6	1.6	—	—
Some primary	41.4	10.6 <sup>b</sup>	4.1	32.0	29.3	24.7
Primary complete		26.4	28.1			
Some lower middle	22.0	3.6	1.8	41.1	41.9	46.5
Lower middle complete		26.2	38.8			
Some academic upper middle	7.4	.6	.2	11.1	14.0	15.5
Academic upper middle complete		10.2	10.5			
Some vocational upper middle		.1	.0	3.2		
Vocational upper middle complete		2.4	3.3			

Some short cycle <sup>c</sup>	.2	.1	.0	3.6	4.7	5.9
Short cycle complete		1.6	3.7			
Some university		.0	.0			
University complete	1.3	1.1	1.8	1.7	2.5	3.7
Postgraduate			.1	.1	.2	.4
Total	99.9	100.1	100.0	100.1	100.0	100.1
N	2,396,927	3,074,563	366,630	388,163,392	5,537,669	446,621,184

*Notes:* <sup>a</sup> illiterate or semilliterate; <sup>b</sup> the 1990 and 2000 1pk (1:1,000 sample) categories were formed by cross-tabulating level of education by whether that level was completed. Incomplete, still in school, and completion unknown are all counted as incomplete; <sup>c</sup> in 1982, this and the following two categories were combined as "some college or university."

Table 2

**Percentage Distribution of Levels of Education, Chinese Females Age 20 and Older, from Five Chinese Censuses**

	1982 census	1990 census	2000 census (1pk file)	2000 census (table)	2005 1%- sample census	2010 census
No schooling	62.2 <sup>a</sup>	41.9 <sup>a</sup>	17.4	16.1	20.4	9.8
Literacy training	—	—	3.8	3.8	—	—
Some primary		9.5 <sup>b</sup>	4.8			
Primary complete	} 23.6	21.5	31.4	} 36.7	} 32.8	} 31.6
Some lower middle	} 9.9	1.6	1.1	} 30.3	} 32.3	} 39.5
Lower middle complete		16.0	28.5			
Some academic upper middle		.2	.1	} 7.3		
Academic upper middle complete		6.4	6.9			
Some vocational upper middle		.0	.0	} 2.6	} 9.7	} 11.6
Vocational upper middle complete	} 3.7	1.6	3.7			



Figure 1 shows the mean years of schooling by year of birth and gender as calculated from each of the five censuses. These distributions are for people age 25 or older in each census year. I censored the distribution at age 25 because in recent years a nontrivial fraction of the population was still in school up to age 25. For 2000, the last year for which I have unit data, the fraction still in school fell below 1 percent only at age 24 (the percentages still in school at ages 20–24 were, respectively, 14.6, 9.4, 4.9, 2.0, and 0.7). I left-censored the series for 1982 and 1990 to include only those birth cohorts that included at least 1,000 cases in the samples. Thus, for 1982, I exclude those born before 1883, and for 1990, I exclude those born before 1900. I collapsed the education categories to render the five series comparable. In particular, specification of incomplete schooling at a given level is possible only for 1990<sup>4</sup>; a distinction between academic and vocational upper middle school is possible only for 1990 and 2,000; and postgraduate schooling is not distinguished until 2000. Thus, it is necessary to ignore these distinctions. I converted educational categories into years of schooling by using the nominal years of schooling associated with completion of each level: no schooling = 0; primary = 6; lower middle = 9; upper middle = 12; short cycle tertiary = 14; university+ = 16.

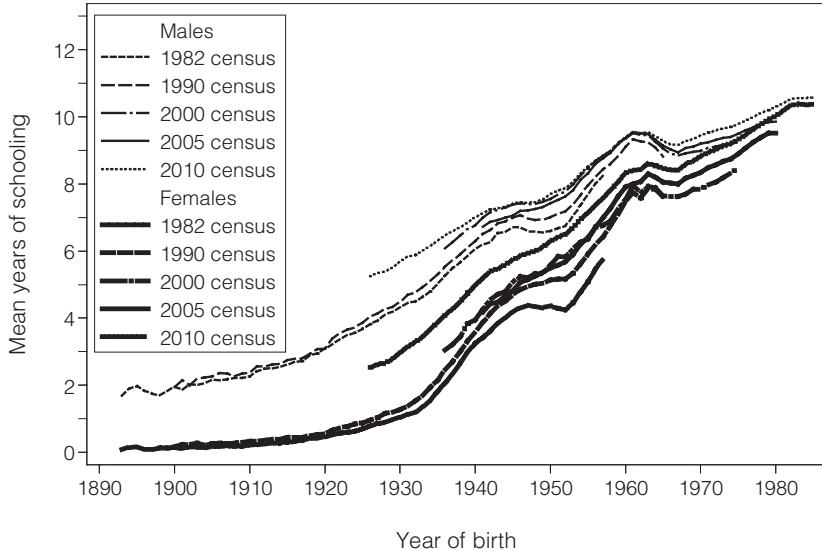
Figure 1 shows a somewhat surprising result: within-cohort estimates of years of schooling differ across censuses by as much as 1.5 years for males and 2.25 years for females. These differences seem quite large. Can they be explained by changes in within-cohort characteristics subsequent to age 25? There are two main possibilities: the acquisition of additional schooling after age 25 and differential mortality by education. Let us consider these in turn.

### ***Additional Education Subsequent to Age 25***

If a substantial fraction of the population with secondary education at age 25 subsequently entered tertiary institutions, their measured years of schooling would increase from 12 to 14 or from 12 to 16. Although we know that overall only a small fraction of the population attained additional schooling after age 25, at least some people returned to school to acquire additional credentials, particularly communist cadres early in the regime,<sup>5</sup> and some people were still in school at age 25. Thus, in principle, the mean years of school completed by each cohort could increase by a nontrivial amount over subsequent censuses. To assess the magnitude of such effects, I computed the mean years of schooling for people age 60–69 in 1996 measured when they were age 20–29, 30–39, 40–49, 50–59, and 60–69, using data from the 1996 survey, *Life Histories and Social Change in Contemporary China* (Treiman and Walder 1996). Doing this was possible because the survey included a complete educational history roster. It turns out that the mean years of schooling increased by only 0.14 years between 1947 and 1956, when the respondents were age 20–29, and 1987–96, when the respondents were age 60–69, and almost all of the increase occurred between ages 20–29 and 30–39. For men, the increase was 0.17 years and for women it was 0.10 years, as would be expected from the greater



**Figure 1. Years of School Completed by Birth Year and Sex, Chinese Adults Age 25 and Over, as Measured in the Censuses of 1982, 1990, 2000, and 2010, and the 1% Sample Census of 2005**



likelihood that men returned to school to attain credentials commensurate with their cadre status. Similar comparisons of educational attainment at age 20–29 and 30–39 for successive 10-year birth cohorts reveal no greater increases than those just reported and—with one exception—they were substantially smaller. The exception was the cohort born between 1947 and 1956, and hence subject to the disruptions of the Cultural Revolution (they turned age 20 between 1967 and 1976); for this cohort, the increase between ages 20–29 and 30–39 was about the same as that of the oldest cohort reported above: 0.11 years for both sexes combined, 0.15 for males, and 0.06 for females. From these computations, I conclude that the effect of adult education is very small and cannot account for any substantial fraction of the intercensus increase in the educational attainment of single-year birth cohorts.

### *Differential Mortality by Education*

Since those with little education are less likely to survive into middle or old age,<sup>6</sup> we would expect each successive census to show a higher average level of education, conditional on year of birth, and these differences should be more pronounced toward the left side of the graph since these are the older cohorts at the time of each census. This is, in fact, just the pattern we see in Figure 1. Comparing the youngest and oldest 10-year cohorts represented in the 1982 and 2010 censuses—those born between 1926 and 1935, and therefore between age 47 and 56 in 1982 and between

age 75 and 84 in 2010, versus those born between 1953 and 1962, and therefore between age 20 and 29 in 1982 and between age 48 and 57 in 2010—for men, the gap in reported schooling is 1.36 years for the former group but only 0.61 for the latter group. For women, the gap between the 1982 and 2010 census is larger and the contrast by age is smaller: 1.94 and 1.63 years, respectively.<sup>7</sup> The reasons for the gender differences are not obvious. However, all in all, these results are consistent with the conjecture that differential mortality by education accounts, at least in part, for the discrepancy across censuses in the years of schooling estimated for each birth cohort. I will have more to say about this below in the course of discussing the consequences of the Great Leap Forward.

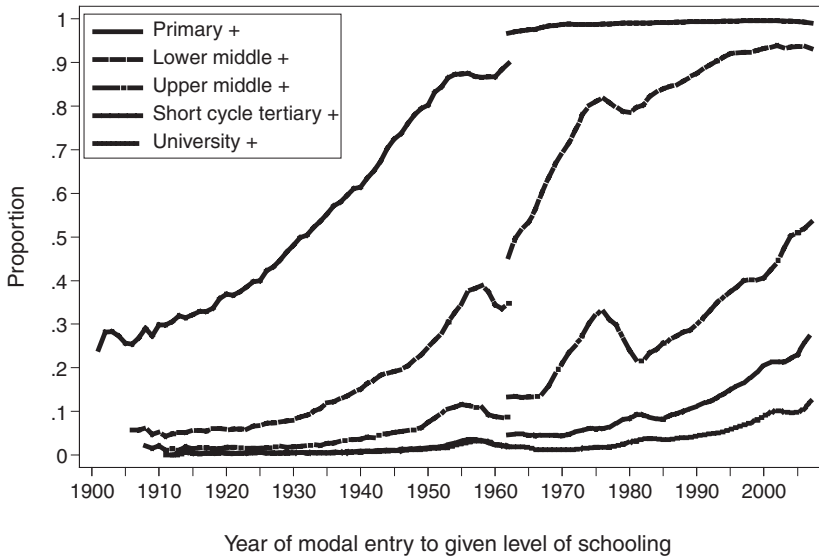
### **Trends in Years of Schooling**

Despite the lack of complete consistency in estimates of years of schooling across censuses, the general pattern is quite clear: (1) with two exceptions there was a steady increase in schooling throughout the twentieth century, from an average of about two years for men and no schooling at all for women born at the beginning of the century to about ten years of schooling for both sexes by the end of the century; (2) the exceptions are the 1959–61 Great Leap Forward period and the 1966–76 Cultural Revolution period, about which I will have more to say shortly; and (3) the level of educational attainment of men and women converged at the end of the century, although not much earlier.

These patterns can be seen much more clearly if we shift from examination of a summary measure of years of school completed to consideration of trends in the proportion attaining successive levels of education (see Figures 2–4). In doing so, it is useful to shift from an analysis of birth cohorts to an analysis of school-entry cohorts. I created school-entry cohorts by adding the modal entry year for each level of education to the year of birth.<sup>8</sup> To make the graphs easier to read, but at the same time to extend the time series as widely as possible, I dropped the intervening censuses and combined the estimates from 1982 and 2010, showing the 1982 data from 1900 through 1962, when the respondents were 20-years old, and showing the 2010 data from 1962 through entry year 2007 to avoid downward dips in the curve due to later-than-modal school entry ages. Note that in this and the following graphs I dropped the restriction of the trend lines to those age 25 or older; this was no longer necessary given the switch to modal school entry age. I chose 1962 as the cut point between the 1982 and 2010 data to minimize the effect of differential mortality by education discussed earlier. Because in 1982 very few people were still in school at age 20, this decision produces little bias in the results, certainly much less than what would be produced by differential mortality. Although, as we already have seen, the estimates for corresponding years are hardly identical, for the most part the graphs can be read as if they contained no breaks.

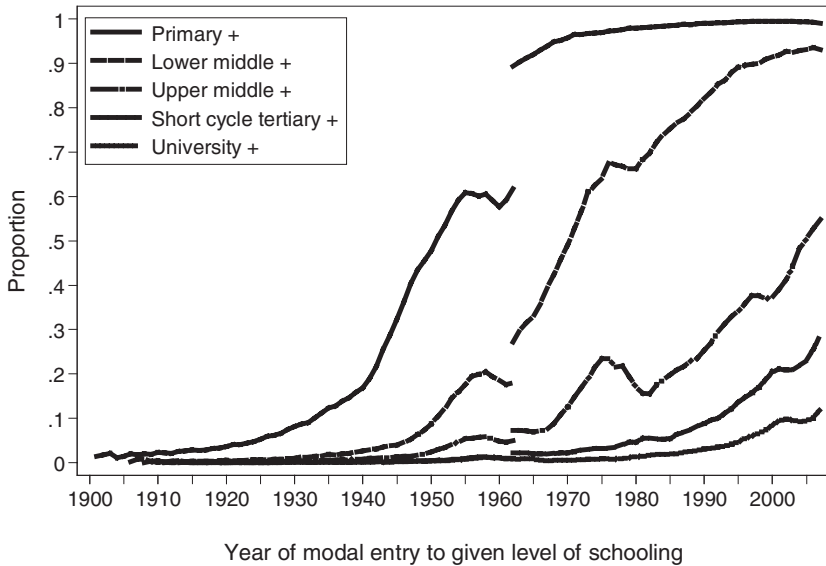
Figure 2 presents the trends for males. From this figure, we see that the expansion of education over the course of the twentieth century was primarily at the bottom,

Figure 2. **Proportion of Men Attaining Successive Levels of Education, by Modal Entry Year for Each Level of Schooling, as Measured in the Chinese Censuses of 1982 and 2010** (lines to the left of breaks are from 1982; those to the right are from 2010)



a dramatic increase in the proportion attending primary and lower middle school, with much less expansion of schooling beyond lower middle school. The fraction of males with primary school education increased from around 25 percent at the beginning of the twentieth century to nearly 100 percent among those entering school around 1970 and thereafter. Similarly, the proportion of males with lower middle schooling increased from about 5 percent at the beginning of the century to over 90 percent by the end of the century. The proportions with upper middle school, short cycle tertiary, or university schooling increased more modestly, from near zero at the turn of the century to, respectively, around 50, 25, and 10 percent, respectively, by the end of the century. However, from other sources (Wan 2006; Wu and Zhang 2010; Yeung 2012), we know that tertiary education increased very rapidly from 1999 on, following adoption by the State Council of the *Plan for Revitalizing Education in the Twenty-First Century* proposed by the Ministry of Education (Yeung 2012, 4). Specifically, Wu and Zhang (2010, Table 5) show that the proportion of 19- to 22-year olds enrolled in school (presumably, almost all in tertiary level institutions) increased dramatically for both males and females between 1990 and 2005, nearly tripling for males (from 8 percent to 22 percent) and more than tripling for females (from 5 percent to 18 percent). It is too early to know how educational expansion will play out in China in the early twenty-first century, but the trend appears to be sharply upward. Figure 3 shows a similar trend in the pattern for females.

**Figure 3. Proportion of Women Attaining Successive Levels of Education, by Modal Entry Year for Each Level of Schooling, as Measured in the Chinese Censuses of 1982 and 2010** (lines to the left of breaks are from 1982; those to the right are from 2010)



Earlier I identified two disruptions to the smooth upward trend in the rate of attaining each level of schooling—the Great Leap Forward period from 1959–1961 and the Cultural Revolution period from 1966–1976. Let us see how these disruptions affected each level of schooling.

### *Great Leap Forward*

Consider first the Great Leap Forward. In the early 1950s, shortly after the consolidation of power by the Chinese Communist Party, the government began to collectivize agriculture, a process that was completed by 1958. Then, in a severely misguided attempt at rapid industrialization, policies were introduced that required rural collectives to engage in primitive industrial production at the expense of tending to grain production. This, plus a run of bad weather, produced a substantial drop in grain production, beginning in 1959 and continuing through 1961, with pre-1959 levels not fully restored until 1965 (Peng 1987, 650). The shortfall in grain production, together with excessive extraction of grain by the state to feed the urban population, resulted in the most disastrous famine in history—an excess of 15–30 million deaths and another 30 million population losses due to postponed births (Chen and Zhou 2007, 659). The Great Leap Forward also had severe con-

sequences for the survivors, especially those who were young children during this period, many of whom experienced malnutrition. There is evidence of a reduction in stature of between 2.94 and 3.03 cm among those who were in gestation or early childhood during the famine (Chen and Zhou 2007, 669).

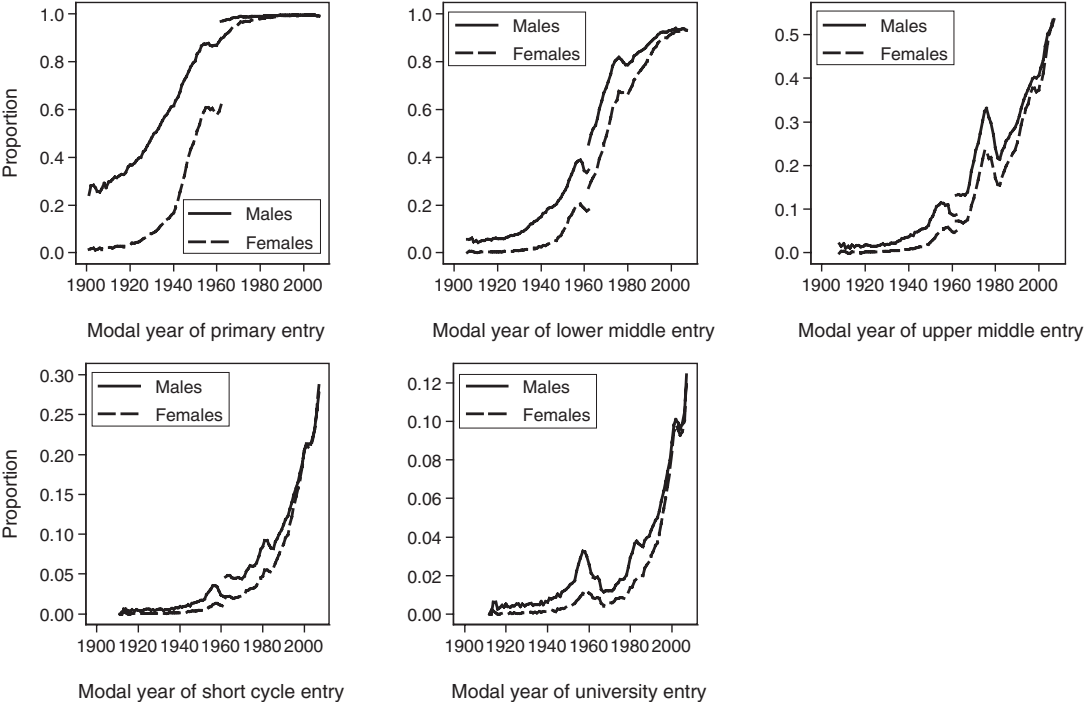
Given the massive malnutrition of the Great Leap Forward years and the need for children to spend most of their time searching for food (a vivid account of the Great Leap Forward is provided by Hua Yu's novel, *Chronicle of a Blood Merchant*, chap. 18), it would seem likely that an additional cost was in the level of education attained by people who were of school age during this period. This is just what we observe in Figures 2 and 3. There were reductions in the proportions attaining primary schooling among those nominally matriculating between 1957 and 1960 and corresponding reductions in lower and upper middle schooling between 1959 and 1961 and, as can be seen better in Figure 4, in tertiary schooling as well. Even though the reduction in primary matriculation ostensibly began before the Great Leap Forward, it is likely that this was in fact an effect of the Great Leap Forward. Recall that the graph shows modal school entry years—age 8 for primary school. However, many rural children began school later than age 8.<sup>9</sup> Thus, some children in the 1957 and 1958 “school entry cohorts” may have expected to enter school in 1959 or 1960 or 1961, but never did. Evidence consistent with Figures 2 and 3 is Almond et al.'s (2007, 12) demonstration that, among those counted in the 2000 census (when they were approximately age 50), the effect of living in a high famine area during the Great Leap Forward was a 7.5 percent reduction in literacy among women and a 9 percent reduction among men. Lavelly et al. (1990, 66ff) also show a similar pattern among women.

The effect of the Great Leap Forward on education together with differential mortality by education helps to explain an apparent anomaly in Figure 1—a clear Great Leap Forward effect in the 1982 data but smaller-to-nonexistent effects in the graphs calculated from later censuses. Given the very strong differential longevity by education shown by Xie (see note 6), together with the truncated education experienced by those who were in their early years of schooling during the famine period, which means they were born in the early 1950s, we would expect to see a strong Great Leap Forward effect among younger people but a gradually diminishing effect as people aged and those with little education died more quickly. Although I have no data on cohort variations in the magnitude of differential longevity by education, it is plausible that such differentials were particularly pronounced during the Great Leap Forward famine because those with the least education were the most likely to experience malnutrition during the famine, which should on average reduce their longevity.

### ***Cultural Revolution***

The second deviation from a relatively smooth trend line was the Cultural Revolution period, which produced sharp increases in the proportion attaining lower or

Figure 4. **Trends in Levels of Educational Attainment, by Gender, as Measured in the Chinese Censuses of 1982 and 2010**  
(lines to the left of breaks are from 1982; those to the right are from 2010)



upper middle school education, followed by a return to the pre-Cultural Revolution trend. In May, 1966, Chairman Mao Zedong began a purge of Communist Party officials, with a campaign that relied heavily upon the mobilization of mass support, particularly among the youth. The Cultural Revolution, as this period is now known, lasted until 1976, ending only with the death of Mao. One of its many consequences was the massive disruption of education in China. Although most primary schools continued to operate as usual, almost all secondary and tertiary level institutions were shut down completely from 1966 to 1968 and most tertiary level institutions remained closed until 1972 (Bernstein 1977; Unger 1982). When the schools reopened, they focused on ideological indoctrination; only in 1977 was a conventional curriculum restored (Hannum 1999, 198–200). In essence, the schools were first closed during the early chaotic years of the Cultural Revolution but then were reopened and used as a way to get marauding teenagers off the streets. But little actual learning was involved, with the result that the knowledge gained per year of schooling was substantially less during the Cultural Revolution than before or since.<sup>10</sup>

Despite the closure of secondary schools from 1966 to 1968, the proportion attaining lower secondary schooling and the proportion attaining upper secondary schooling actually rose during the Cultural Revolution, peaking in 1976, as is clear from Figures 2 and 3. There are three possible explanations for this.

First, in keeping with the egalitarian policies of the central government during the Cultural Revolution, many new schools were opened, mainly in rural areas. Although the increase in the number of schools had little impact on opportunities to attain primary education, which already were near universal, it resulted in a sharp increase in the proportions attaining lower and upper middle schooling. The pattern shown in Figures 2 and 3 are consistent with annual statistics on the number of pupils, the number of teachers, the number of schools, etc. published in *China Compendium of Statistics 1949–2008* (China National Bureau of Statistics 2009, 69, 71, and 72). However, the newly opened schools often had poorly qualified teachers,<sup>11</sup> a situation exasperated by the fact that schools were not permitted to recruit new teachers on the basis of “bourgeois expertise” but rather had to do so on the basis of political credentials (Unger 1982, 155). Once a focus on academic merit was restored in 1977, many of these schools were closed down, strongly reducing schooling opportunities for rural children (Lin 1993, chap. 2; Pepper 1980).

Second, the introduction of the “family responsibility system” in the early 1980s may have resulted in greater reductions in the proportion matriculating in lower or upper middle school than might be expected if the pre-Cultural Revolution trend had continued uninterrupted; it is difficult to be definitive about this because projecting trends into the future even under the assumption of monotonic increases is intrinsically imprecise. In 1979, an Economic Reform policy was introduced by Deng Xiaoping (officially adopted by the Fourth Plenum of the Chinese Communist Party in September 1979, as cited by Chow 2002, Sect. 3.2), which, among

other things, included the dismantling of communes (collective farms) and their replacement by the “family responsibility system” in which use rights to land were distributed to individual families with the specification that they were free to sell on the open market any surplus remaining after the in-kind grain tax was paid. This strongly increased both agricultural productivity (Lin 1987, 1988) and the opportunity costs of keeping children in school (Tsui 1997, 109), which may have contributed to the decline in the proportion attaining lower or upper middle education in rural areas. Certainly, some Chinese officials appeared to attribute the decline in middle school enrollments to the family responsibility system, as noted by Lavelly and his colleagues (1990, 72–73). Wu (2010, 93–94) also attributes such declines, shown in his Figure 1 and Table 2, as a reduction in the proportion of primary school graduates going on to lower middle school and the proportion of lower middle school graduates going on to upper middle school, to the family responsibility system.

The timing of the reduction in lower and middle attainment levels is, however, somewhat inconsistent with the attribution of declines in achievement to the family responsibility system because the declines began in 1977 and bottomed out in 1980 for lower middle school and 1982 for upper middle school, before the family responsibility system had been widely implemented. Of course, insofar as substantial numbers of rural children had been matriculating later than the nominal matriculation age assumed here (age 13 for lower middle schooling and age 15 for upper middle schooling), changes in the matriculation rate might in actuality have been a bit later than implied by Figures 2 and 3, a point similar to that made in my discussion of the Great Leap Forward. This, indeed, appears to be the case, especially for the small number of rural youths gaining upper middle school admission. Among those with at least lower middle schooling, 68 percent of those age 13 between 1973 and 1976, 74 percent of those age 13 between 1977 and 1980, and 82 percent of those age 13 between 1981 and 1984 entered lower middle school at or before age 13; the corresponding percentages entering upper middle school at or before age 15 were 31, 46, and 63; computations are based on the 1996 survey, *Life Histories and Social Change in Contemporary China* (Treiman and Walder 1996). Thus, the decline in lower and upper middle schooling in the years immediately following the end of the Cultural Revolution could well be due to some combination of school closings and education forgone by those helping out in family agricultural enterprises.

A third possibility is that the increase in lower and upper middle schooling may be more apparent than real. At various points since 1950, the standard 6-3-3 system of schooling was replaced by other systems, including a 5-3-2 system during the Cultural Revolution (Hannum 1999, 199); thus, insofar as this system was widely adopted, those who graduated from lower middle school during the Cultural Revolution had a year less schooling than those who graduated earlier or later, and upper middle school graduates had two years less schooling. In a similar way, in some places the 6-3-3 system was replaced by a 5-5 system, with



Table 3

**Mean Length of Previous Level of Schooling Among Those Who Entered Each Level Before, During and After the Cultural Revolution, Chinese Adults Ages 20–69 Interviewed in 1996 (*N*'s in parentheses)**

Entry period <sup>a</sup>	Level entered		
	Lower Middle	Upper Middle	Tertiary
Before Cultural Revolution	5.7 (1,553)	2.5 (979)	2.5 (78)
During Cultural Revolution	5.4 (1,407)	2.5 (678)	1.7 (73)
After Cultural Revolution	5.3 (1,380)	3.0 (719)	3.0 (168)

*Notes:* <sup>a</sup> The Cultural Revolution period extended from 1966 through 1976. The mean years of primary schooling were calculated for those who turned 13 before, during, and after the Cultural Revolution period, since this was the modal lower middle school entry age. The corresponding ages for upper middle and tertiary matriculation were 15 and 18.

many schools established in work places (*danwei*).<sup>12</sup> Finally, according to Davis (see note 12), sometimes middle schools admitted those who had had only a few years of primary schooling. Lavelly and his colleagues (1990, 72) are particularly forceful in dismissing the reality of the increase in middle school education during the Cultural Revolution: The apparent rapid rise in secondary education during the Cultural Revolution may be, to a considerable degree, a result of period-specific changes in credentialing that had little to do with real learning. Primary schools were often reclassified as providing secondary education, and curricula were de-based with political study and other activities. Therefore, the peak in secondary enrolment may partially represent meaningless secondary school credentials. The subsequent precipitous decline may be a return to reality.

It is unclear how common these “fast track” arrangements were. The available evidence suggests that, except for tertiary schooling, they were not common. Table 3 shows the mean duration of the previous level of schooling for lower middle, upper middle, and tertiary matriculants. Inspecting the table, it appears that the Cultural Revolution had little effect on either lower or upper middle matriculation. Among those who entered lower middle school during the Cultural Revolution, there is no evidence of a reduction in the duration of primary schooling and among those who entered upper middle school there is no evidence of a reduction in the duration of lower middle schooling. Only among those who entered tertiary institutions during the Cultural Revolution was the duration of upper middle schooling reduced relative to the preceding and following periods.

In sum, it is evident that, with two exceptions, the pattern of rising levels of

educational attainment over the course of the twentieth century has been quite smooth. The exceptions, discussed in detail above, are the Great Leap Forward period, which generally suppressed educational attainment, and the Cultural Revolution period, which increased the level of attainment, although probably not the level of learning.

The pattern of educational attainment for females, shown in Figure 3, is essentially the same as that shown for males in Figure 2, except that until the end of the twentieth century the proportion of women attaining each level of education was lower than that for men. Until the 1930s, less than 10 percent of women had any schooling, and until the communist period almost no women attained any schooling beyond the primary level. However, the gender gap for primary education began to close after 1950 and for higher levels of education after the economic reform that began in 1978, so that by the end of the century it had essentially closed at all levels of schooling. This convergence can be seen clearly in Figure 4, which shows the trends for males and females at each level of schooling. Ye and Wu (2011) argue persuasively that the closing of the gender gap in schooling was the result, at least in part, of the rapid decline in fertility in the late twentieth century (Poston et al. 2006, 12) because the smaller the number of brothers, the less likely it was that a girl had to forgo schooling in order to help support the schooling of her brothers. And, of course, in one-child families, there were no brothers to defer to.

## Summary

I have shown that for both males and females there was a smooth increase in the level of schooling through the twentieth century with only two exceptions—the Great Leap Forward period, when years of schooling declined, and the Cultural Revolution period, when the proportion with middle school education increased, but then declined immediately following the end of the Cultural Revolution. These results are a bit surprising given China's turbulent history, with a twenty-five year war between Nationalists and Communists, exacerbated by the Japanese occupation from 1931 to 1945, and major vicissitudes in Chinese policy over the course of the last 60 years. Apart from the Great Leap Forward and Cultural Revolution, there also were other shifts, with policies swinging between egalitarian and meritocratic bases for school admission (Lu and Treiman 2008) and social advancement (Li and Walder 2001; Walder et al. 2000). Although these policy shifts may have affected the determinants of educational attainment, with the exception of the Great Leap Forward and the Cultural Revolution they had no apparent effect on the proportion of the population attaining each level of education<sup>13</sup>; apparently it requires truly catastrophic events, such as the Great Leap Forward and Cultural Revolution, to derail the constant pressure for more educational opportunity that characterized China, as well as many other nations, in the twentieth century and the beginning of the twenty-first century.

## Notes

1. Because the rural-urban gap in educational attainment is large in China (Treiman 2012, Figure 1), I considered trying to disaggregate trends by rural versus urban residence. Doing so is, however, problematic for at least two reasons. First, where people lived at the time of the census is not always the same as where they lived at the time they were going to school. Indeed, among those interviewed in the 2008 survey, *Internal Migration and Health in China* (www.ccpr.ucla.edu/IM-China, accessed March 14, 2013), a national probability survey of 3,000 adults age 18–64, about one-quarter of the population had moved from rural to urban areas after age 14 (Treiman 2009, Table 4). Second, sometimes rural places are reclassified as urban in anticipation of future population growth even though they remain rural in character (Chan 1994). Thus, I decided that any attempt at rural-urban disaggregation of trends in educational attainment could well be misleading. For an analysis of trends in rural-urban educational disparities from 1925 to 1990 based on residence at age 14, see Treiman (2012, Figure 1). Similar difficulties, together with a paucity of data, led me to forgo any attempt to disaggregate trends by region.

2. China, in fact, instituted an essentially similar education system at the beginning of the twentieth century, first adapting a Japanese model (Abe 1987, 63) in the imperial reforms of 1902 and 1904 and then replacing it with an American model in 1922 (Bastid 1987, 11; see also Cleverley 1985, chaps. 1–2). Both models distinguished primary, lower middle, upper middle, and tertiary schooling, although the exact number of years at each level varied somewhat over time. A competing system, the imperial civil service examination, was abolished in 1905. To be sure, formal schooling of any kind was distributed rather unevenly throughout China. Some locales had no schools at all and some had *sishu* schools—ungraded schools equivalent to “one-room school houses” common in the American West during the nineteenth century. Among respondents to the 1996 survey, *Life Histories and Social Change in Contemporary China* (Treiman and Walder 1996), a national probability sample survey of 6,090 adults age 20–69, only 22 percent of those who completed their education prior to 1950, when the communist government was established, had any schooling at all and most of these reported graded schooling as their highest level. Only 5.2 percent had “other” schooling, almost all of whom finished their schooling at *sishu* schools. The implication of this is that there is little reason to be concerned that the trend lines prior to 1950 misrepresent levels of schooling in China during the first half of the twentieth century. In any event, as can be seen in Tables 1 and 2, none of the census distributions include categories other than modern graded schooling. It is unclear how other kinds of schooling were coded because the Chinese census coding rules are very poorly documented.

3. In addition, especially early in the communist era, there have been various work-study schemes designed to impart literacy and other skills to cadres who had missed out on regular schooling. But these involved only a tiny fraction of the population—as of 1996, only about 0.2 percent of those who finished any level of education after 1950 ever attended “other” schools; computations are based on the 1996 survey, *Life Histories and Social Change in Contemporary China* (Treiman and Walder 1996).

4. In this graph, I use the published computations from the 2000 census.

5. Thanks are due to William Parish for pointing this out when I presented this paper at the UC Berkeley Center for Chinese Studies, August 31, 2012.

6. Xie, using data from the 1990 census, showed that “the standardized crude death rate for the male illiterate population is, respectively, 3.5, 2.2, 1.6, and 1.3 times that of college educated, senior high educated, junior high educated, and primary educated persons. Female illiterate crude death rates are, respectively, 3.1, 1.9, 1.6, and 1.2 times higher” (1996, 41).

7. The fact that differentials across censuses exist for younger as well as older cohorts

is consistent with the fact that for both men and women in China, age-specific mortality rates increase in a nearly linear way from before age 30 until after age 90 (Banister and Hill 2004, 64).

8. I calculated these twice, from the 1996 survey, *Life Histories and Social Change in Contemporary China* (Treiman and Walder 1996) and from the 2008 survey, *Internal Migration and Health in China* ([www.ccpr.ucla.edu/IM-China](http://www.ccpr.ucla.edu/IM-China), accessed March 14, 2013). Both data sets contain complete educational histories in addition to the usual variables required to study the effect of social origins. The two surveys yielded generally similar results, although the most recent cohorts appear to have entered school slightly earlier than older cohorts. The model entry years I estimated were: primary = 8; lower middle = 13; upper middle = 15; short cycle tertiary = 18; university+ = 19. Of course there is substantial variation around the mode, which accounts for the five- rather than six-year gap between primary and lower middle matriculation and the two- rather than three-year gap between lower and upper middle matriculation; those who enter school later are less likely to continue on to the next level.

9. From the 1996 survey, I calculated that 33 percent of rural-origin children born between 1949 and 1952 (and therefore age 8 between 1957 and 1960) who had any schooling entered school later than age 8. Note that school entry ages greater than 8 were not simply a consequence of the Great Leap Forward because they also pertain to the previous four-year cohort, those born between 1945 and 1948, and therefore age 8 between 1953 and 1956. In this group, the corresponding percentage is 35.

10. In an analysis published elsewhere (Treiman 2007), I showed that students who turned age 11 during the early years of the Cultural Revolution commanded vocabularies equivalent to students with a year less education who turned 11 before and after the Cultural Revolution.

11. Often these were *minban*—locally financed and organized schools (Pepper 1980, 7).

12. This point was made by Prof. Deborah Davis when I presented this paper at Yale University, November 4, 2011. She claimed that people were told that the second five years was the equivalent of upper middle school, even though the content was hardly equivalent and those who went through this system were required after the Cultural Revolution to retake the entrance examination in order to enroll in a standard upper middle school. Her claim is that since people were told that their education was the equivalent of upper middle school, they are likely to report this in surveys.

13. Another possible exception is the rapid increase in tertiary enrollments following implementation of the 1999 *Plan for Revitalizing Education in the Twenty-First Century* discussed above. However, it is too early to know the full impact of this policy change.

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