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RESEARCH BRIEFS

Education Policies and Intergenerational Educational Mobility in China: New Evidence for the 1986–95 Birth Cohort

Jiawei Wu[1] · **Guillaume Marois**[1,2]

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Abstract

Research on educational mobility for Chinese born in or before 1976–85 abounds. Although the Compulsory Education Law implemented in 1986 and the expansion of higher education introduced in 1999 changed Chinese millennials' educational achievements, little is known about the educational mobility for the 1986–95 birth cohort and where it stands in the long-term trends. In this study, we calculated population-level educational percentile ranks by birth cohort and gender using data from the 1982 to 2020 China Censuses before linking these ranks to respondents in Chinese General Social Survey (CGSS) or China Family Panel Studies (CFPS) to document 1986–95 birth cohort's educational mobility and its historical position. We also explored the role played by offspring's *hukou* origin (urban or rural) and ethnicity (Han or ethnic minorities). In the 1986–95 birth cohort, women's educational percentile ranks for secondary and tertiary levels fell below men's for the first time in China, suggesting that the proportion of women in higher education overtook men's. From 1976–85 to 1986–95 birth cohorts, while educational rank-rank correlations remained stable in all parent–child dyads and were constantly higher for offspring with urban *hukou* origin, there is suggestive evidence on increased educational mobility for women with rural *hukou* origin. Ethnicity differences were not found. Our findings imply that China's Compulsory Education Law and higher education expansion may have contributed to greater educational mobility for women with rural *hukou* origin in the 1986–95 birth cohort and their diminished disadvantage in education.

Keywords China · Educational mobility · Educational trends · Intergenerational mobility · Educational percentile rank

✉ Guillaume Marois
marois@iiasa.ac.at

[1] Asian Demographic Research Institute, School of Sociology and Political Sciences, Shanghai University, Shanghai, China

[2] International Institute for Applied Systems Analysis, Wittgenstein Centre for Demography and Global Human Capital (IIASA, OeAW, University of Vienna), Laxenburg, Austria

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Introduction

Intergenerational educational mobility indicates to what extent an individual's educational achievement (destination) is correlated with his/her parent's education (origin). Greater educational mobility reflects weaker contributions from family background, which is of vital importance in tackling inequality, fostering fairness, encouraging aspirations, and promoting sustainable development (Narayan et al., 2018). However, empirical studies revealed varying levels of educational mobility across countries and continents, suggesting regional and global inequalities in educational opportunities (Azam & Bhatt, 2015; Breen et al., 2019; Causa & Johansson, 2010; Hertz et al., 2008; Hu & Qian, 2023; Kye, 2011; Skopek & Leopold, 2020; Torche, 2021; Wittemann, 2023).

For decades education policies increasing elementary education and expanding higher education implemented to promote equal educational opportunities (Torche, 2021) have not necessarily achieved intended effects. For example, Demirel-Derebasoglu and Okten (2022) noted that after Turkey's compulsory schooling reform, gender gap decreased in completing new compulsory schooling but remained unchanged at the post-compulsory schooling level. Urbina (2018) found that Mexico's "11-year plan" education reform led to greater mobility in primary and lower-secondary schooling but lower mobility at higher levels of education. These findings are consistent with the "maximally maintained inequality (MMI)" hypothesis formulated from empirical evidence in Ireland (Raftery & Hout, 1993) that educational expansion will translate to less inequalities in educational opportunity only when the advantaged groups have reached saturation at a particular level of education.

In China, educational mobility continue to spark public debates and academic interests (Gruijters et al., 2019; Hannum et al., 2019). Following its founding, China implemented various egalitarian education policies such as the waiver of tuition fees, rapid roll-out of primary and secondary education in rural areas, and favoring political criterion over academic ability for admission to universities (Deng & Treiman, 1997). As a result, there was exceptionally high educational mobility for the 1950s and 1960s birth cohorts, but the educational mobility declined for the 1966–75 and 1976–85 birth cohorts (Xie et al., 2022; Zhou & Xie, 2019). Ample research repeatedly found huge inequality in educational mobility tied with an individual's ascribed characteristics such as urban/rural *hukou* (household registration) status (Fang & Feng, 2020; Wu, 2019; Wu & Treiman, 2004), place/province of birth (Hannum & Wang, 2006), gender (Huo & Golley, 2022), and ethnicity (There are 55 ethnic minorities in China who account for less than 10% of China's population) (Hannum, 2002).

China implemented the Compulsory Education Law in 1986 to promote universal 9-year schooling and introduced the expansion of higher education in 1999 to boost human capital accumulation (Golley & Kong, 2018). Higher education expansion was found to increase educational mobility in general (Liu & Wan, 2019) and benefit women from rural areas or women with intermediately educated parents in receiving higher education (Zhang & Chen, 2014). However,

Guo et al., (2019) showed that these two policies led to greater educational mobility for the urban population but lower mobility for the rural population. Gruijters, (2022) found that educational expansion in China diminished disparities in obtaining basic education, but inequality persisted or even increased at the more advanced levels for the 1985–89 and 1990–94 birth cohorts. These studies used years of schooling or probabilities of transitions between adjacent educational levels which, compared with rank-based measures, are less comparable across birth cohorts and gender (Hannum et al., 2019; Xie et al., 2022). Although a few studies used sample-wide or population-level educational percentile ranks (Emran et al., 2020, 2023), less is known about educational mobility, its variation by gender, *hukou* status, and ethnicity, and where it stands in the long-term trends for China's 1986–95 birth cohort who were exposed to major education policy changes and had reached the last leg of their educational advancement (master or PhD) by 2020.

Data and Methods

Data and Sample

We primarily drew on data from Censuses and surveys. First, we used the 1982 China Census microdata (1% of the population) from the Integrated Public Use Microdata Series (IPUMS) (Minnesota Population Center, 2020), as well as the 1990, 2000, 2010, and 2020 China Censuses aggregated statistics compiled by China's National Bureau of Statistics. The purpose was to capture the population-level distribution of educational attainment for men and women from various birth cohorts to generate educational percentile rank for each educational level. Then, as parent–child dyads could not be identified in Censuses, we turned to survey data from Chinese General Social Survey (CGSS) and China Family Panel Studies (CFPS). Both nationally representative, CGSS was launched in 2003 and adopts a repeated cross-sectional design (Bian & Li, 2012) while CFPS is a longitudinal survey fielded biannually from 2010 (Xie & Hu, 2014). Although CFPS does not suffer from sample truncation due to coresidency restrictions on nonresident family members (Emran et al., 2020), information on nonresident family members' *hukou* origin and ethnicity is missing and they do not have individual-level sampling weights. Despite sample truncation which only applies to respondents' nonresident children, CGSS data were used for our main analysis following prior work (Xie et al., 2022) and we performed sensitivity analysis using CFPS data (details are given in the Supplementary Material). We pooled 11 waves (2003, 2005, 2006, 2008, 2010, 2011, 2013, 2015, 2017, 2018, 2021) of the CGSS and selected respondents aged 25 or above in the interview year who fell in birth cohorts 1946–55, 1956–65, 1966–75, 1976–85, and 1986–95. Our study sample included 83,569 respondents (as expected, the number of respondents in the 1986–95 birth cohort was relatively small, n = 5079) whose fathers' and mothers' birth cohorts varied from 1896–1905 to 1976–85.

Educational Percentile Rank

Margin-free (Hannum et al., 2019) and less prone to bias (Emran & Shilpi, 2018; Emran et al., 2018; Nybom & Stuhler, 2017), rank-based measures of intergenerational mobility become increasingly popular in economics literature (Chetty et al., 2014). Less sensitive to education expansion (Torche, 2021), educational percentile rank tells a person's position in educational achievement relative to peers of the same gender in the same birth cohort (Xie et al., 2022). We used China Censuses to calculate educational percentile ranks for seven educational levels ((semi-)illiterate, primary school, middle school, high school, junior college, bachelor, and master/PhD) which run from 0 (lowest) to 100 (highest). Informed by Xie et al., (2022), wherever possible we calculated a birth cohort's educational percentile rank when they were 25–34 years old in a specific wave of Census to handle survival selection by education.

Rank-Rank Correlation

We linked educational percentile ranks to pooled CGSS data matching respondents' and their parents' birth cohort and gender. We estimated weighted ordinary least-squares (OLS) regressions to examine parent–child rank-rank correlation in education to explore relative educational mobility in father-son, father-daughter, mother-son, and mother-daughter dyads (Hu & Qian, 2023) by respondents' (i.e., offspring's) birth cohort and gender. The weights were constructed from the original sampling weight in each wave of CGSS to account for variation in sample size by birth cohort across multiple waves (Song et al., 2020) and we reported standardized coefficients.

Results

Trends in Educational Percentile Rank

Table 1 presents the trends in educational percentile rank by gender in China for ten 10-year birth cohorts from 1896–1905 to 1986–95. The educational percentile rank for each educational level persistently trended downward for both genders with few exceptions (e.g., the educational percentile rank of junior college and bachelor degree for men and women from the 1946–55 birth cohort). Until the 1976–85 birth cohort, women's rank for each educational level had always been higher than men's, implying a persistent higher proportion of women in lower educational levels. However, the gap continued to narrow and among the 1986–95 birth cohort, for the first time for each educational level from middle school to master/PhD, women's ranks fell below men's.

Table 1 Educational percentile ranks by gender for multiple 10-year birth cohorts from 1896–1905 to 1986–95 in China

	1896–1905	1906–15	1916–25	1926–35	1936–45	1946–55	1956–65	1966–75	1976–85	1986–95
Men										
(Semi-)illiterate	35.253	32.252	26.809	19.678	10.729	6.019	1.957	0.733	0.348	0.191
Primary school	82.522	78.911	71.388	60.503	44.951	34.759	15.604	12.523	5.196	2.634
Middle school	96.493	95.783	93.137	88.111	79.111	73.549	49.722	50.965	36.216	24.297
High school	99.009	98.858	98.168	96.490	93.508	94.222	84.335	85.724	72.226	54.938
Junior college	99.585	99.494	99.266	98.488	97.347	98.909	97.677	95.423	86.708	74.873
Bachelor	99.800	99.761	99.657	99.283	98.729	99.496	99.417	98.772	95.325	90.771
Master/PhD	–	–	–	–	–	–	–	99.899	99.476	98.983
Women										
(Semi-)illiterate	48.948	48.255	46.300	41.629	28.104	19.812	7.518	1.885	0.570	0.236
Primary school	98.794	97.950	95.523	89.643	70.713	58.474	31.688	19.485	7.332	2.875
Middle school	99.784	99.572	98.920	97.261	90.216	85.937	64.638	58.969	39.719	23.630
High school	99.914	99.845	99.620	99.025	97.090	96.995	89.804	88.757	74.154	52.019
Junior college	99.957	99.941	99.857	99.577	98.999	99.462	99.265	96.696	87.341	71.359
Bachelor	99.982	99.972	99.934	99.799	99.515	99.742	99.764	99.251	95.655	89.054
Master/PhD	–	–	–	–	–	–	–	99.943	99.512	98.725

Data source: IPUMS 1982 China Census data. 1990, 2000, 2010, and 2020 China Censuses aggregated statistics

Trends in Rank-Rank Correlation in Education

We calculated rank-rank correlation in education for father-son, father-daughter, mother-son, and mother-daughter dyads by offspring's birth cohort for all respondents in CGSS and by respondents' *hukou* origin and ethnicity from birth cohort 1946–55 to 1976–85. We visualized the results in Figs. 1, 2, and 3 and presented the estimates in the Supplementary Material (Table S1). Figure 1 shows that from birth cohort 1946–55 to 1976–85, parent–child educational rank-rank correlation trended upward for all four dyads and parent-daughter correlation was generally higher than parent-son correlation. Between 1976–85 and 1986–95 birth cohorts, educational mobility remained stable in all parent–child dyads. We used seemingly unrelated estimation to test if the coefficients varied between groups and found that the slight rise in father-son rank-rank correlation (from 0.41 to 0.43) and the little dip in mother-daughter rank-rank correlation (from 0.47 to 0.45) were not statistically significant.

Figure 2 shows that from birth cohort 1946–55 to 1986–95, the rank-rank correlation in education trended upward for Chinese with urban *hukou* origin. In comparison, it ascended less markedly for Chinese with rural *hukou* origin and decreased slightly in the 1986–95 birth cohort for parent-daughter dyads. As noted previously, we formally tested the differences and found that the small increases in educational mobility for women with rural *hukou* origin in father-daughter and mother-daughter dyads in the 1986–95 birth cohort were not significant ($p > 0.1$ in both cases). Figure 2 also shows that the rank-rank correlation in education had been generally higher for Chinese with urban *hukou* origin in all four dyads and the gap continued

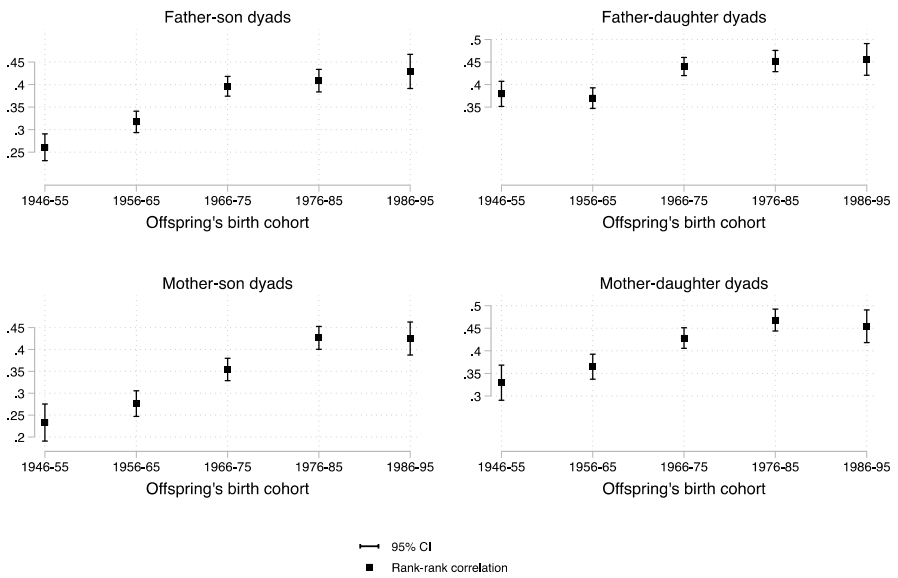

Fig. 1 Parent–child rank-rank correlation in education by offspring's birth cohort in China (results based on CGSS data)

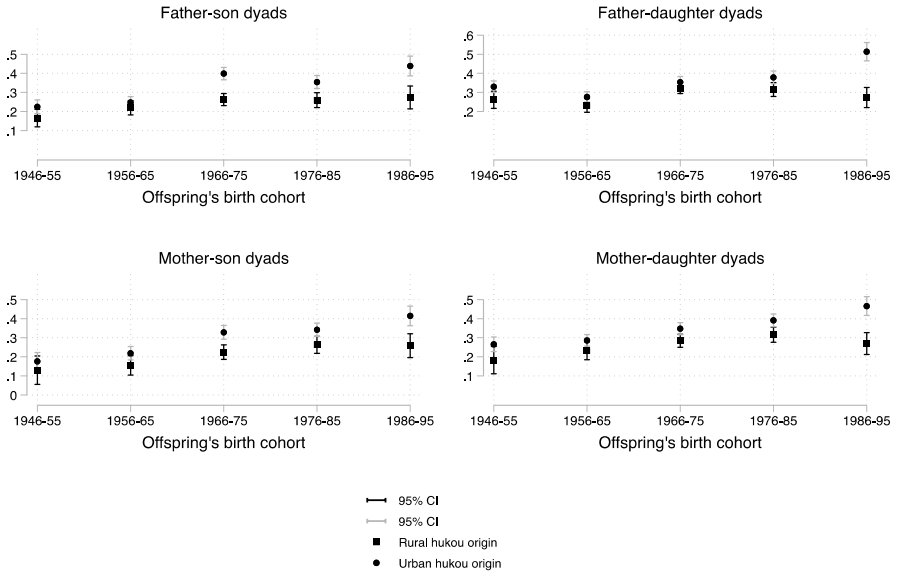

Fig. 2 Parent–child rank-rank correlation in education by offspring's birth cohort and *hukou* origin in China (results based on CGSS data)

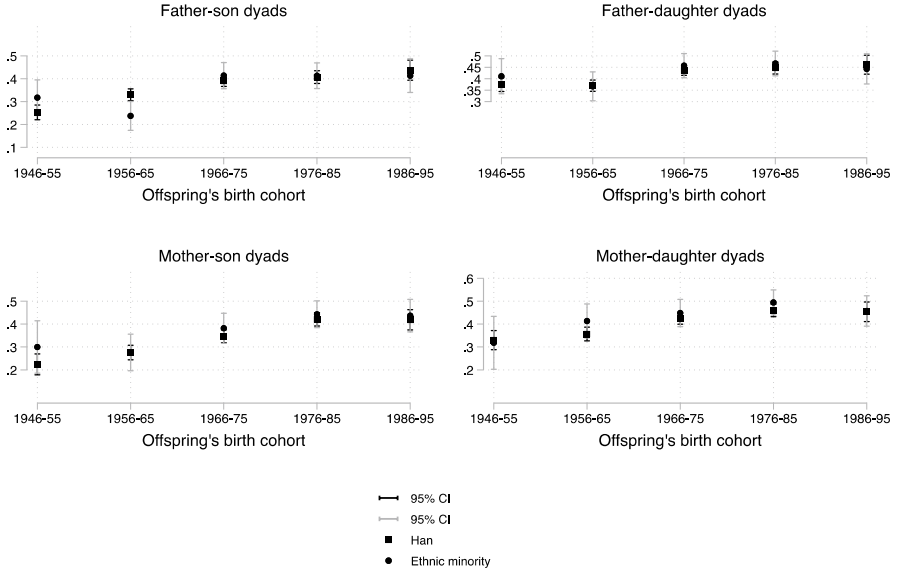

Fig. 3 Parent–child rank-rank correlation in education by offspring's birth cohort and ethnicity in China (results based on CGSS data)

to widen in the 1986–95 birth cohort (e.g., standing at 0.51 (urban *hukou* origin) versus 0.27 (rural *hukou* origin) in father-daughter dyads). As shown in Fig. 3, the rank-rank correlation in education trended upward for both Han Chinese and ethnic minorities, but we did not find ethnicity differences in educational mobility for any parent–child dyad in any birth cohort.

The low response rates in CGSS 2005 or 2006 may cause sample selection problems so we removed respondents in these waves (n = 15,625), repeated the analyses, and found similar results (Figures S1, S2, and S3 in Supplementary Material). Sensitivity analysis using CFPS data implied greater decreases in rank-rank correlation (i.e., greater increases in educational mobility) for women with rural *hukou* origin in father-daughter dyad ($p > 0.05$) and mother-daughter dyad ($p < 0.01$) in the 1986–95 birth cohort (Figure S5). However, there were discrepancies in regards to other findings (e.g., in Figure S4 the drop in rank-rank correlation for women from the mother-daughter dyad in the 1986–95 birth cohort was also significant, but it was insignificant in Fig. 1). These discrepancies are possibly driven by the very high proportion of respondents with rural *hukou* origin in CFPS (around 84%, compared with about 64% in CGSS). Taken together, evidence on the increased educational mobility for women with rural *hukou* origin in the 1986–95 birth cohort may be best interpreted as suggestive.

Discussion and Conclusion

In this study, against the backdrop of China's Compulsory Education Law implemented in 1986 and the expansion of higher education introduced in 1999, we documented China's 1986–95 birth cohort's educational attainment and education mobility and situated them in long-term trends. The educational percentile rank for each educational level dropped continuously among men and women in China, reflecting steady absolute upward educational mobility. The few exceptions found in the 1946–55 birth cohort were caused by the tumultuous Cultural Revolution (1966–76) during which the hiatus of tertiary education left multiple cohorts of young adults seeking a limited number of openings (Deng & Treiman, 1997). The reversal of women's disadvantage in education was observed in the 1986–95 birth cohort where women's educational percentile rank from high school to master/PhD fell below men's for the first time, suggesting a higher proportion of women in secondary and tertiary education. This remarkable progress testifies reduced gender inequality in education in China after higher education expansion (Treiman, 2013; Wu & Zhang, 2010; Zeng et al., 2014) and follows the trend in high-income countries (DiPrete & Buchmann, 2013).

We found an upward long-term trend in parent–child rank-rank correlation in education from 1946–55 to 1976–85 birth cohorts in China, implying reduced educational mobility and echoing Huo and Golley (2022) and Xie et al. (2022). However, this upward trend stagnated in all parent–child dyads from 1976–85 to 1986–95 birth cohorts. Future work is required to investigate whether this stagnation truly holds in China and resembles the long-term stability found in the United States (Xie et al., 2022).

For Chinese with urban *hukou* origin, the rank-rank correlations continued to climb in all parent–child dyads from the 1976–85 to 1986–95 birth cohorts. This indicates the reinforced effect of family background on urbanites' education regardless of gender, confirming that *hukou* is a critical ascriptive factor in social mobility in China (Li, 2021). Both daughters and sons with urban *hukou* origin were beneficiaries of exclusive parental investment after the one-child policy was implemented in the late 1970s (Fong, 2002). Consequently, they were more likely to acquire an advantageous position in education their parents once held. In contrast, analyses based on CGSS and CFPS data hinted at suggestive evidence that women with rural *hukou* origin in the 1986–95 birth cohort may have had greater educational mobility. These women, historically disadvantaged in education, may benefit noticeably from the Compulsory Education Law and higher education expansion that offered more educational opportunities (Guo et al., 2019; Liu & Wan, 2019; Zhang & Chen, 2014). However, there may be inequality in the ranking of higher education institutes respondents attended (e.g., elite versus ordinary universities) (Charles & Bradley, 2009) as predicted by the "effectively maintained inequality (EMI)" hypothesis (Lucas, 2001), which cannot be examined here due to lack of information.

We did not find differences in educational mobility in China between Han Chinese and ethnic minorities. Although mobility and inequality are two different dimensions of social stratification (Xie et al., 2022), our finding echoes Golley and Kong (2018) who showed the persistent minor role played by ethnicity, compared with *hukou* status at young age, in the inequality of opportunities in education. However, this finding shall be interpreted with caution due to small sample size (reflected in wider confidence intervals) and the heterogeneity in socio-economic status among various ethnic minority groups in China.

We acknowledge some limitations in this study such as not considering the non-linear (e.g., convex or concave) relationships (Emran et al., 2020) in rank-rank correlations, not examining absolute mobility at the 25th/75th percentile of the parental educational rank distribution (Emran & Shilpi, 2018), or not further investigating if educational mobility varied between parental farm/nonfarm occupations in the rural sample (Emran et al., 2023). Overall, our results imply that the long-term decline in educational mobility in China may have plateaued for China's 1986–95 birth cohort at the population level. Our short report documents the reversal of female disadvantage in education and provides time-sensitive suggestive evidence on increased educational mobility for women with rural *hukou* origin in the 1986–95 birth cohort following China's Compulsory Education Law and higher education expansion introduced before 2000. These findings based on CGSS and CFPS data invite more research into evaluating the effects of education policies and call for policy-makers to take continued actions to tackle inequality and promote fairness.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s11113-024-09887-2.

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Declarations

Competing interests No potential competing interests was reported by the author(s).

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