北京大学中国经济研究中心
China Center for Economic Research

讨论稿系列
Working Paper Series

No.E2017001 **2017-03-03**

Women's Political Participation and Gender Gaps of Education in China: 1950–1990

By Yang Yao and Wuyue You*

Does women's political participation promote gender equality in education? Using the ratio of female members in the Chinese Communist Party (CCP) as a measure for women's political participation, we show that female party participation in 1950 had a long-term and positive impact on gender equality of education from 1950 to 1990. Combining the county-level CCP records with individual-level data provided by the 1990 census, we find that for school-age children, contemporary women's political participation significantly narrows the gender gap by raising girls' probability of enrollment and completion of school relative to those of boys. The positive effects remain when we use the female party membership in 1950 as an instrument for the contemporary female party membership in individual periods. The effects are also invariant when only the Cultural Revolution period is studied. (*JEL* J16, N35, P35)

* Yao: National School of Development and China Center for Economic Research, Peking University, No. 5 Yiheyuan Road, Haidian District, Beijing, P.R. China 100871 (e-mail: yyao@nsd.pku.edu.cn); You: National School of Development and China Center for Economic Research, Peking University, No. 5 Yiheyuan Road, Haidian District, Beijing, P.R. China 100871 (e-mail: wuyueyou8912@gmail.com). We thank Lisa Cameron, Yingjie Feng, Priti Kalsi, Xin Meng, Elizabeth Perry, and seminar participants at the Australian National University, Monash University, Peking University, University of Melbourne, and the 2017 Chinese Economists Society North American meeting for their helpful comments and suggestions. We appreciate the help given by the Peking University Library to digitize the county chronicles and the Materials of the Chinese Communist Party's Organizational History. We also appreciate the help provided by Tianyang Xi and Xiaobo Zhang for data collection and the research assistance provided by Chen Chen, Xianjun Fang, Yuqi Han, Wenlan Jiang, Shuang Li, Chao Liu, Jizhou Liu, Man Liu, Songrui Liu, Zhongtian Liu, Yuling Ma, Yanquan Mo, Zhuo Nie, Wen Tan, Bohan Zeng, Guang Zeng, Wanjia Zeng, Xuanchen Zhen, and Guo Zheng.

Women's Political Participation and Gender Gaps of Education in China: 1950–1990

1. Introduction

Does women's participation in politics affect the welfare of their own gender? A growing number of studies provide various answers to that question. As women's preferences appear to be systematically different from men's, some researchers focus on how female political identities affect government policies that have gender implications. In U.S. states with the highest percentages of female representatives, Thomas (1991) shows that more priority bills dealing with issues of women, children, and families are introduced and passed. Chattopadhyay and Duflo (2004) find that political reservations for women in India lead to more investment in infrastructure closely related to women's needs. Using data on close elections between men and women in India in the period 1967-2001, Clots-Figueras (2012) finds that woman politicians raise the probability for children to attain elementary education. However, in the study of U.S. mayors from 1950 to 2005, Ferreira and Gyourko (2014) suggest that the gender of politicians has no impact on policy outcomes, and female politicians' policy choices are consistent with the median voter theorem. Ban and Rao (2008) also find that female leaders do not perform differently from male leaders when they test the finding of Chattopadhyay and Duflo (2004) in southern Indian states with low levels of gender disparity. Clots-Figueras (2011) shows that it depends on female politicians' social positions whether they perform more "women-friendly" in Indian states.

However, female participation in politics may also influence their social welfare by changing societal perceptions of women. Beaman and others (2009) find that in India the exposure of female leaders affects public opinions and attitudes toward women. Beaman and others (2012) report that female leadership, acting as a positive role model for younger generations, can raise the aspiration and educational outcome of adolescent girls. Kalsi (2017) also finds that, in rural India, the underlying mechanism for the positive impact of female leadership on sex selection is a change in attitudes because of the exposure to female leaders.

Most of the positive results about female leaders' "role model" effect are found from India's political reservation program. As in the study of women as policy changers, the question remains: do those results hold in other countries? In addition, is the positive effect of female political participation long lasting so as to permanently change societal perceptions? Because political reservations for women have been increasingly adopted to raise women's social status, providing an answer to those two questions has important policy implications as well as contributing to the existing academic literature.

Modern China provides a significant context to answer those two questions. China's long-lasting imperial history created a complete set of patriarchal institutions and male-centered values. Political participation, a main symbol of social status, was only available for well-educated men through the imperial examinations. Educational investment for daughters, therefore, was almost useless for parents, and innocence was even regarded as a virtue for women. In the 1880s, it was estimated that the male literacy rate was about 30 to 45 percent, while the female literacy rate was only 2 to 10 percent (Rawski 1979). Since the collapse of Imperial China in 1911, there has been a striking transformation of female status in both household and public life. The change was greatly accelerated by the social mobilization of the Chinese Communist Party (CCP) when it gained control in 1949. Female participation in politics and the labor force was widely encouraged and, in some periods, even implemented as mandatory polices. The traditional Confucius ethics, which advocates "three kinds of obedience and four kinds of virtue" for women, gradually gave way to the values of "women can hold half the sky." At the same time, parents were more willing to invest in their daughters' education. According to our estimates from the 1990 census, the female-male ratio (FMR) of average schooling years rose from 0.21 in 1950 to 0.72 in 1990.

This great transformation provides a perfect case to study the long-term effects of women's political participation. In this paper, we focus on the impacts of women's political participation on the gender gap in education from 1950 to 1990. We investigate whether and how female political status contributed to narrowing the gap.[1]

[1] In a companion paper (Yao and You 2016), we investigate the effect of women's political participation on sex imbalances.

Our variable for measuring female political participation is female party membership (FP) at the county level, which is defined by the share of women members in the CCP. From the Politburo Standing Committee, the most powerful decision-making body in China, to the village committee, the basic administrative unit, CCP controls the core power at every level of society. Through its grassroots organizations, tens of millions of citizens could participate in political life by joining the party. Since its founding in 1921, the CCP has drawn women into the party, and this process has greatly accelerated since 1949. Together with other policies geared toward women liberation, CCP stirs up the enthusiasm of a substantial number of women to support its rule and to contribute to social production. In the Mao era, being a party member carried a substantial political and social status and, in many cases, implied better job prospects and material gains. Thus, joining the party was a significant indicator of a woman's political status.

For the outcome variable that measures gender inequality of education, we not only work with the FMR of educational attainments in the county population, but also school enrollment and completion at the individual level.

We obtain the main part of our data by digitizing the county chronicles of approximately 1,200 counties. Data are also obtained from CCP's grassroots organizations, the 1990 census, and several other sources that provide county-level geographical information. In particular, the county chronicles provide data for CCP membership and its composition in a county, as well as some of its social-economic characteristics that are important for our study.

The main difficulty faced by our empirical identification for the causal effect of FP on the gender gap is that there may be omitted variables that affect both variables. The son-preference culture, for example, may influence both female participation in politics and girls' educational attainments, and those variables are hard to accurately measure. In the study of women's enfranchisement, a regression discontinuity design in close electoral races between female and male politicians is often employed to control for unobserved confounders (Clots-Figueras 2012; Brollo 2013; Ferreira and Gyourko 2014). In the studies about India, the political reservation program is used as an ideal natural experiment (for example, Pande 2003; Chattopadhyay and Duflo 2004; Beaman and others 2009).

Our identification relies on the exogenous regional distribution of CCP membership and FP in the early 1950s. After the Red Army period (1927–1936), the CCP re-emerged as a national force in the Anti-Japanese War and the Civil War. Its distribution was critically dependent on its military activities during those two times. Female membership closely followed party membership. Because the geographic areas of the CCP's military presence were quite diverse regarding social and economic development and regional culture, the incidence of female party membership in 1950 (FP50) can be treated as exogenous to the educational gender gap in future years, particularly when other observed social-economic variables, including the gender educational gap in 1950, are controlled.

To show the long legacy of FP50, we first run a cross-sectional regression of the gender educational gap in 1990 on FP50. The regression is conditional on the gender educational gap, CCP membership (CCP50), and other social-economic variables in 1950, as well as a set of time-invariant geographical variables. For various indicators measuring the gender gap in 1990, FP50 always has a positive effect on the FMR of educational attainment. Although part of this long-term effect can be attributed to the transformation of social norms of FP50, the reinforcement of rising FP after 1950 probably played a larger role. To explore that possibility, we take advantage of the individual information provided by the 1 percent sample of the 1990 census and study the impact of contemporary FP on the FMR of education. The data allow us to construct a panel of age cohorts in different counties. Thus, a two-way fixed-effect model can be estimated to alleviate the endogeneity concern about contemporary FP. We find that contemporary FP generally plays a stronger role than FP50 in reducing the gender gap. We construct an instrument for contemporary FP based on FP50 to deal with the possibility that there may be some county-specific factors and time-varying unobserved factors co-moving with both contemporary FP and children's educational attainments. Because of the exogeneity of FP50 and its correlation with future FP, this instrument is almost ideal. We find that the instrumented FP still has a significantly positive effect on the FMR for most educational indicators. Last, we study the Cultural Revolution alone because this was the period when primary education spread the fastest in China and unobserved political motivations might determine its speed. We add county-specific linear time trends to control for county-level unobserved political motivations and find that our panel results are invariant.

The rest of the paper is organized as follows. In Section 2, we present a succinct description of the CCP's role in transforming Chinese society, changing gender educational inequality in the study period, and altering female political status during Mao's era. In Section 3, we introduce the data sources and the construction of variables used in our descriptive and econometric analyses. We present the empirical results concerning the legacy of FP50 in section 4. In Section 5, we conduct panel regressions with individual-level data to study the effects of contemporary FP. We conclude with section 6.

2. Historical Backgrounds

2.1 The CCP and changing women's political status in Chinese society[2]

The interactions between the CCP and Chinese society have long been one of the key study topics of modern China. In Mao's China (1949–1976), the party-state was a powerful hand that controlled and organized people's lives from the womb to the tomb. The CCP penetrated deeply into every blood capillary of the society during its domination. Table 1, adopted from Yao and You (2016), provides information about the CCP membership between 1950 and 1987 in the country and our sample. In 1950, the CCP had 5 million party members, but its membership almost doubled by 1955. In the next ten years, membership doubled again to 18.71 million. Much of this expansion happened in the countryside; farmers and illiterate citizens accounted for 54 percent and 19 percent, respectively, of total membership in 1965.[3] The Cultural Revolution did not stop the expansion of the party, although its speed was reduced. After Mao's death in 1976, however, the rate of expansion substantially slowed down.

[Table 1 about here]

Although women's status was much improved in urban areas during the Republic of China (1912–49), women liberation in rural China waited until the CCP obtained

2 In our companion paper, we have provided a detailed description of the historical backgrounds. In this paper, the description has been kept to a minimum.

3 The statistics are from *The Materials of the Chinese Communist Party's Organizational History in 1921–1997*, Volume 7.

power in 1949. The CCP systematically encouraged women to walk out of their houses to join production and public life. A female version of the socialist New Man was promoted through movies, dramas, and other popular media and arts. Female political participation increased substantially and reached its peak in the mid-1970s in terms of various indicators. In particular, female membership reached 13.53 percent. However, the rise of women's political participation reversed after Mao's death in 1976, which was particularly acute in the countryside. The last two columns of Table 1 present the CCP membership and female membership in our sample counties, most of which were rural during the period covered by our study. Before 1976, female membership in our sample counties kept up with the national trend; after 1976, it declined much quicker than the national trend. This nonlinear trend actually buttresses our identification because it allows us to avoid the confounding effects of linear trends.

The identity of a party member in Mao's era meant much more than today. A party member carried the privilege of playing a significant role in local politics. Furthermore, party members were offered better career opportunities and material gains. Some of those benefits still remain today (Walder 1995; Li and others 2007; Guo and others 2014). Women liberation in the Mao era raised the status and consciousness of women. It had the potential to reduce son preferences that were once widely held by rural families and thus to narrow down the gender gap in educational attainment through the policy and "role model" channels that have been established by the literature that we reviewed in the introduction. Female party membership is more of an indicator for grassroots women's political participation than an indicator for top women's decision power. However, as we mentioned, although not everyone was a state cadre, CCP members served as agents of the state and were privileged to participate in local politics. For example, every village set up a branch of "Women's Federation" (commonly known as "fu-lian"). Usually, a female party member or a female activist headed the organization. Its purpose was to carry out the policies of women protection and liberation set by the CCP. So it was possible for female party members to influence local policy making. Female political participation could also shape societal perceptions about women by setting up a role model for young girls and their parents. Women's participation in the party demonstrated that women could have a higher value than was widely believed before. Together with the CCP's other social mobilization efforts, female participation could have a long-lasting effect on social norms. A recent field experimental study found that Beijing women born in 1958 have a stronger inclination for competition than Taipei women born in the same year as well as Beijing women born in 1976 (Booth and others 2016).

2.2 Gender inequality of education

Under a tradition of son preferences and male domination, daughter discrimination could lead to a poor investment in girls' education. The gender gap of education was large in historical times (Rawski 1979). During 1928–1937, the government of the Republic of China launched a massive "Literacy and Education Campaign." According to historical records, however, prominent gender gaps remained in spite of a remarkable drop in the entire population's illiteracy rate. For example, historical records of Ting Hsien (now Ding Xian county) in Hebei Province show that in 1927 among young people between 12 and 25 years of age, the male illiteracy rate was 56 percent while the female illiteracy rate was 94 percent. After six years of education campaign, in 1934, the illiteracy rate of men in the same age group dropped drastically to 10 percent while that of women was still as high as 73 percent (Yen 1934). According to our estimates from the 1990 census, the average schooling years of adult women (18 or older) was only one-fifth of that of men in 1950. Since then, the gender gap has narrowed down substantially. Table 2 shows the average schooling years of the adult population by gender in the country and our sample counties from 1950 to 1990. Both the level of education and the FMR increased steadily in the country and our sample counties. The achievements of our sample counties, though, were lower than those of the whole country, mostly because our sample counties were mostly rural during the period covered by our study.

[Table 2 about here]

In their analysis of the gender educational inequality in China from 1949 to 1985, Hannum and Xie (1994) show that the improvement of gender equality for compulsory education (nine years and below) was not steady over time. They find strong negative effects from the Great Leap Forward (1958–1960), strong positive effects from the Cultural Revolution (1966–1976), and weak effects from the economic recovery (1949–1957) and reform era (1977–1985). We will spend more effort in studying the Cultural Revolution because educational performance could be more heterogeneous across counties and could be more influenced by unobserved political inclinations in this period. In addition, researchers have also found that, as in other developing countries, family backgrounds had significant impacts on the gender educational gap in China. For instance, Bauer and others (1992) investigate gender inequality in urban China from 1949 to 1988 and find that the education and occupation of fathers had substantial effects on gender inequality. A higher educational attainment of fathers had strong effects on girls' school enrollment, and being a farmer's daughter was a greater disadvantage than being a farmer's son. Our panel studies based on individual-level data can deal with those concerns. Finally, the gender educational gap might also depend on the economic values of adult women. One potential proxy for the economic values of adult women is women's nonfarm employment rate in a county (farm employment rate was virtually 100 percent because of the commune system). Unfortunately, the county chronicles do not provide that information, which is fairly understandable because most of the counties were completely rural during the period covered by our study. The county fixed effects in our panel regressions, though, can provide some control because changes of nonfarm employment were minimal between 1950 and 1990—perhaps except in some coastal counties in the last several years of the study period.

3. Data Sources

We made use of county chronicles from 1,200 counties,[4] the 1990 census, and the publications of the CCP's central committee to obtain relevant historical information for 1950–1990. Geographic information system (GIS) sources were also consulted to obtain geographical information of the counties. In this section, we provide a description of those data sources and introduce the construction of the key variables we use in our empirical analysis.

[4] The Peking University Library has a collection of about 1,900 county chronicles in 21 provinces. However, only about 1,600 of them report data of party membership, and about 1,200 of them report data of female party membership. Those counties are fairly evenly distributed across China (see our description in the next section), although counties in the western part of the country are systematically missing. Because the vast majority of the Chinese population lives in central and eastern parts of the country, this omission is not likely to affect our main results.

Chinese counties have had a long time to compile county chronicles (called *xian zhi*). This tradition was halted after the CCP revolution. By the late 1980s and early 1990s, however, counties began to compile chronicles again. Those chronicles provide retrospective records about the county since 1949. Relevant to our study, they provide annual information about demographics, CCP membership and branches, economic production, education and other indicators of social development, and government budgets and allocations. Most of the data are presented in tables, but some are scattered in the text. We digitized the relevant tables, and in the later stage of data clearance, we supplemented the tables by manually reading the text.[5] Although a county's geographic boundaries might have changed from 1950 to 1990, the county chronicles adjusted the demographic records, as well as other political, social, and economic statistics to its jurisdiction at the time when the chronicles were compiled.

After the round of compilation at the end of the 1980s and early 1990s, most counties stopped compiling county chronicles. Instead, the statistical yearbook has become the standard annual publication that records economic and social data of a county. Although we could get most of the social-economic data from the statistical yearbooks, not all of them report the composition of CCP membership. In addition, the only source for us to obtain individual-level data from a census that could be matched to specific counties is the 1 percent sample from the 1990 census.[6] Our data stop at 1990 for that reason.

In the 1990s, the CCP central committee and its committees at provincial, prefectural, and county levels all published internal publications, together titled *Materials of the Chinese Communist Party's Organizational History* (*Zhongguo Gongchandang Zuzhi Shi Ziliao,* abbreviated as *The Materials* hereafter). These publications provide detailed information of the CCP membership, its composition, and local branches from the country down to specific counties since the CCP's founding in 1921. We used the data provided by these publications to double-check

[5] We obtained the county chronicles from the Peking University Library. Digitization of the tables and the first round of proofreading were delegated to library staff members. We then completed several rounds of clearance and collected more data from the text.

[6] The individual-level data from a census after the 1990s could only be matched to specific prefecture-level cities. Another census that published individual-level data that can be matched with county information was the 1 percent sample of the 1997 agricultural census. But it only contains information from the agricultural population.

the data of CCP membership provided by the chronicles. And in cases where there was missing data in the chronicles, the publications filled in that information.

The published statistics of the 1990 census provide breakdown information about the enrollment and graduation rates by gender at different educational levels of each county in 1990. A 1 percent sample accompanied the 1990 census. The sample records more detailed individual-level information about education, family relation, sex, occupation, age, and other details. Finally, GIS information was obtained from the Chinese Historical GIS compiled by the Harvard Yenching Institute (Harvard Yenching Institute 2007).

The main explanatory variables, female membership in the CCP (FP) and CCP's membership in the population (CCP), are created from the annual statistics provided by county chronicles and *The Materials*. The number of CCP members for each year since 1949, as well as breakdowns by gender, level of education, age, occupation, and ethnic values are recorded in the chapter titled "Chinese Communist Party" from the chronicles and in the "Statistical Table of Basic information of CCP members" from *The Materials*. Because the data in the chronicles and *The Materials* were mainly compiled from the historical documents in the official archives, recall biases should be minimal. The chronicles of each county and *The Materials* use the same classification system, making it possible to construct uniform measures. The two variables FP and CCP enter regressions in decimals.

The main outcome variable is the FMR of educational attainment. It is defined on several educational indicators, including average schooling years, literacy rate, and enrollment and graduation rates at different levels of schooling. The indicators are directly obtained or calculated from the 1990 census (in regressions with county-level data) and its 1 percent sample (in regressions with individual-level data). The 1 percent sample is education recorded by a categorical variable with values 1, 2, 3, and so on, which indicates illiterate, elementary school dropout, elementary school, and so forth. We use the information about county-level average schooling years in our descriptive and regression analysis.[7] For that purpose, we convert the categorical variable into a continuous variable of schooling years by the following rule: illiterate

[7] The chronicles do not record education in detail; only some counties report results of the 1964 and 1982 censuses.

= 0 years, elementary school = 6 years, middle school = 9 years, high school or specialized secondary school = 12 years, and college or junior college = 16 years. Dropout from a certain level is set as the average of the schooling years one level below and the schooling years of that level. The average schooling years of the population in a specific year are then calculated on the adult population in that year. Most of the population has supposedly finished education by adulthood. The average schooling years of each sex are calculated in the same way.[8]

One of the concerns is whether migration had an impact on gender inequality before 1990. If it had, our estimates of the impact of FP in historical times would be biased. However, the rigid registration system (the *hukou* system) in China heavily impeded migration across regions.[9] It was especially true before 1990 when even traveling needed an official recommendation letter. Therefore, we contend that migration was not a significant factor affecting educational attainments from 1950 to 1990.

We also make use of two county-level, time-variant, social-economic variables—the population sex ratio and per-capita industrial output value—as control variables in our regressions.[10] Information about these two variables is recorded on a yearly basis by county chronicles although missing cases are not uncommon. Two other social and economic variables we use in the ordinary least squares (OLS) regressions for PF50 are the shares of rural residents and Han people in 1990. They were both obtained from the 1990 census. Because of the restriction set by the *hukou* system, both shares had limited changes between 1950 and 1990. Therefore, we will treat them as time-invariant during this time. We can control the process of industrialization and urbanization by the per-capita industrial output. Finally, we make use of county geographic attributes provided by Chinese Historical GIS in the OLS regressions for PF50. The attributes include distance to the province capital,

---

[8] Different rates of death for age cohorts may affect the accuracy of the calculation. However, because the sample is large enough, we do not envision that this is a big problem.

[9] The *hukou* system was introduced in 1958 as a response to the large influx of people from the countryside to the city during the Great Leap Forward. Before that time, migration was scant in rural areas. Forty million people entered the city in 1958, but half of them were sent back to their home villages at the end of the 1959–1961 famine. Migration was effectively stopped until the late 1980s.

[10] China's gross domestic product (GDP) accounting was only started in the early 1980s, so county chronicles do not record GDP data for earlier years.

distance to the nearest treaty port, share of hilly grounds, and average altitude of the county. The appendix provides summary statistics for all the variables defined in this section.

4. Long-Term Effects of FP50

4.1 The exogeneity of FP50

Our identification strategy critically depends on the randomness of FP50 with regard to the gender gap of education during 1950–1990. In our companion paper, we present detailed data and analysis to show that FP50 is indeed orthogonal to regional cultures about women. Our main argument is that the distribution of CCP50 and the distribution of FP50 were highly correlated with the CCP's military activities in the Anti-Japanese War and the following Civil War, which had nothing to do with regional cultures about women. The areas of heavy CCP military presence were quite diverse in terms of the level of social and economic development and regional culture. Conditional on the observed social, economic, and geographic variables we introduced in the last section, particularly the FMR of educational attainment in 1950 that summarized the cultural preferences formed until 1950, CCP50 and FP50 were likely to be exogenous to the formation of educational attainments in future years.

Figure 1 presents the relationship between FP50 and the gender gap of education from 1950 to 1990. First, to create the figure, we regress FP50 on CCP50, sex ratio of the population in 1950, average schooling years of the adult population in the same year, and geographic variables we introduced in the last section. Then, we divide the sample counties into four quarters by the residual of FP50. Higher-order quarters have higher values of residual. The figure then shows the FMR of schooling years for each quarter during 1950–1990. The four quarters were indistinguishable in 1950; divergence occurred around 1955. The top two quarters and the bottom two quarters converged, respectively, and the top two quarters performed consistently better than the bottom two quarters from 1955 onward.

[Figure 1 about here]

Figure 2 presents the relationship between FP50 and the gender gaps defined on several educational indicators in 1990. The four quarters are the same as those defined for Figure 1. The top two quarters clearly performed better than the bottom two quarters for every educational indicator. And *t*-tests show that the gap between the mean of the top two quarters and the mean of the bottom two quarters is statistically significant at the 1 percent level.

[Figure 2 about here]

In summary, the evidence provided by Figures 1 and 2 tells us the following: (a) FP50 is orthogonal to FMR of schooling years in 1950 once CCP50 and other demographic, socioeconomic, and geographic variables are controlled and (b) FP50 has a robust and significant impact on the FMRs in future years and the difference is the most pronounced between the top two quarters and bottom two quarters of counties.

4.2 Empirical results

After establishing the exogeneity of FP50, we conduct a formal econometric analysis on the long-term effects of female political participation. Our explanatory variable is FP50 and the outcome variables are educational indicators for gender inequality in 1990. To start, we notice that the FMR of educational attainment in a county in 1990 (FMR90) could be decomposed into two components: its predecessor in 1950—FMR50—and the change happening in between. The change is a result of the combined influence of FP50 (conditional on a set of variables representing cultural preferences formed until 1950 and CCP50) and the temporal changes of socialeconomic conditions between 1950 and 1990, plus a random shock received during that time. For the set of variables representing cultural preferences formed until 1950, we include FMR50, the average schooling years of the adult population (EDU50), and the set of geographic variables (G) introduced in the last section. To account for the temporal changes of socialeconomic conditions between 1950 and 1990, we control a set of variables measured in 1990, Z_{90}, including the sex ratio, per-capita industrial output, share of rural residents, and share of Han people. So our estimation equation is the following:

$$\text{FMR90} = \alpha\text{FP50} + \beta\text{CCP50} + \gamma\text{FMR50} + \phi\text{EDU50} + \varphi Z_{90} + \omega G + \varepsilon \,. \qquad (1)$$

In the equation, ε is the random shock received between 1950 and 1990, and α, β, γ, φ, and ω are parameters to be estimated. Because FP50 is preset with respect to the dependent variable, neither reverse causality nor simultaneity biases should be a worry. The remaining confounding factor for an unbiased estimate of α is the possibility of the existence of missing variables. More specifically, if there were time-persistent but unobserved factors that would influence both PF50 and FMR90, then the estimate of α could be biased. However, we believe that this possibility is unlikely to exist under the specification of Equation (1) because, as we showed in the last subsection, FP50 is exogenous to future gender educational inequality condition on the other variables measured in 1950. For clarity, our identification assumption is thus:

IA. Conditional on the control variables in Equation (1), FP50 is orthogonal to the error term ε.

Table 3 presents the OLS regression results for Equation (1). FMR90 is defined on five educational indicators: schooling years; literacy rate; and the graduate rates of primary school, middle school, and high school, respectively. FP50 is shown to have a significantly positive effect on every indicator. The point estimate shows that with a 1 percent increase in FP50, the FMR in 1990 would increase by 0.19 to 0.38 percentage points for individual educational indicators. The lowest estimate is obtained for primary school graduation, and the highest estimate is obtained for middle school graduation. The lowest value of FP50 is 0, and the highest value is 0.296 (see Appendix). From the point estimate provided in column (1) of Table 3, the average schooling years of women in 1990 in the county with the highest presence of FP50 would be 6.3 percent higher than in a county with the lowest one, taking the average schooling years of men as 100 in both counties. This average is 5.8 percent of the largest gap of the FMR of schooling years in 1990.

[Table 3 about here]

For the control variables, Table 3 only shows the results of CCP50, FMR50, and EDU50, and it omits the results of other variables to save space. CCP50 only produces significant estimates for middle school and high school graduation rates, but the other two variables return positive and significant estimates for all educational indicators. Educational attainment and its gender gap in a region indeed persisted for a long time.

5. Panel Regressions Based on Individual Data

5.1 Plain panel analysis

The results of Equation (1) have been obtained by exploring cross-sectional variations across our sample counties. The 1 percent sample of the 1990 census allows us to construct an individual-level panel to study the impacts of FP in contemporary years. Technically, the main advantage of a panel is that it allows us to explore both cross-sectional and longitudinal variations. Specifically, we can introduce county fixed effects and cohort (birth year) fixed effects to control time-invariant and county-specific unobserved factors (such as cultural preferences) and countrywide time-varying unobserved factors (such as political movements) that might affect both contemporary FP and individual educational choices. We model individual educational choices as follows:

$$EI_{icb} = \alpha Female_i + \beta FP_{cb} + \gamma FP_{cb} \times Female_i + \tau W_{cb} + \delta H_i + \theta_c + \omega_b + \varepsilon_{icb} . \qquad (2)$$

In the equation, EI_{icb} is a dummy variable that indicates whether individual i of birth cohort b (defined as people born in year b) in county c attained a certain level of schooling. We investigate six levels of schooling: primary school enrollment, graduation from primary school, middle school enrollment, graduation from middle school, high school enrollment, and graduation from high school. Because we rely on the 1 percent sample of the 1990 census to obtain individual information of education, people younger than a certain age in that year might not have started or finished a certain level of education. To fully utilize the sample, we study people older than 10, 15, 16, 18, 19, and 21 years of age in 1990 for the six levels of schooling, respectively.[11]

The variable *Female* is the gender dummy that is equal to 1 if a person is a woman and 0 otherwise. The variable FP_{cb} is the FP of county c that was most likely to

[11] Children usually started primary education at age six or seven in 1990. But the starting age could be postponed in some poor rural areas. This is why we use 10 years old as the cutoff when primary school enrollment is studied. The duration of primary school was already six years in 1990, and the duration of middle school and high school were both three years. So the cutoffs for enrollment and graduation allow for sufficient delays.

influence cohort b's decision for a certain level of education. Depending on the type of decision, FP_{cb} takes values in different years. In general, we focus on the year or several years immediately before a cohort was about to make a certain type of decision. This way, we can make sure that FP_{cb} is predetermined with respect to EI. First, because most children started primary education at seven in the study period, FP_{cb} takes its value of the year when cohort b was seven years old when EI is primary school enrollment or primary school graduation. Second, the situation becomes more complicated when EI is middle school enrollment or graduation. Apparently, people make those two decisions only if they have finished primary school. Therefore, FP in the several years before a person was about to decide (usually at age 13) whether to go to middle school at all affected the decision. So FP_{cb} takes its average value for the years when cohort c was between 7 and 12 years old. Third, the situation is similar when EI is high school enrollment or graduation. In this case, FP_{cb} takes its average value for the years when cohort c was between 7 and 15 years old.

This rule is also applied to construct other county-level, time-varying, socioeconomic variables, which are summarized in W_{cb} (including CCP membership, sex ratio in the population, per-capita industrial output value, average schooling years, and FMR of schooling years in the adult population). In addition, H_i is a set of personal and family variables, including the type of *hukou*, ethnicity, whether a first child (including the only child in the family), father and mother's educational attainments and occupations, whether living in a family with a female head of household, and family size. Finally, θ_c and ω_b are the county and cohort fixed effects, respectively.

The coefficient of FP, β, measures FP's impact on men's educational attainment. The coefficient of $FP \times Female$, γ, measures the gap between FP's impacts on men and women. We are mainly concerned with this parameter. We understand that gender gaps in education can be influenced by many factors. In addition to social norms, they may be shaped by economic considerations. For example, women may have higher opportunity costs of schooling because of their value in home production (Aldermand and King 1998). Because daughters usually do not live with their parents after marriage, the potential returns of their education accrued to their parents are discounted by their parents, leading to lower investment in daughters (Quisumbing and Maluccio 2000). Gender differences in work opportunities for educated workers may also have an ambiguous effect because better opportunities raise both the opportunity cost of continuing in school and the potential returns to time spent in school (Orazem and King 2007). County-level socio-economic variables and personal and family variables are meant to control those economic considerations. The gender dummy *Female* summarizes any other remaining gender gap.

Equation (2) is estimated using a linear probability model. Table 4 presents the results for the six educational choices. The dummy *Female* bears a significantly negative coefficient for all six choices, indicating that biases against women were significant. The effect is particularly strong for middle school. Women are shown to be 31.1 percent less likely than men to enroll in middle school and 25.7 percent less likely to graduate from middle school. The coefficient of *FP* is insignificant except in the case of primary school graduation in which it is significantly negative and in the case of middle school enrollment in which it is significantly positive. However, the coefficient of the interaction term between *FP* and *Female* is significantly positive in all cases. Those two results indicate that female political participation at best had mixed impacts on men's educational attainments, but had a positive impact on women's educational attainments. Specifically, 1 percent increase in FP at the corresponding schooling ages would raise a girl's probability relative to that of a boy to enroll in primary school by 0.19 percent, to graduate from primary school by 0.73 percent, to enroll in middle school by 1.12 percent, to graduate from middle school by 0.94, to enroll in high school by 0.32 percent, and to graduate from high school by 0.22 percent, respectively.

[Table 4 about here]

It is surprising to find that a higher level of CCP membership hurts school attainments because its coefficient is negative for all six educational choices and significant except for high school enrollment. Among the personal and family variables, higher levels of parents' education strongly improve a person's educational attainments. Being the first child and living in a household headed by a woman also help. Being Han helps a person up to graduating from middle school. In contrast, being born to a rural family strongly reduces a person's educational attainments. Those results are consistent with the findings in the educational literature.

5.2 Instrumented panel analysis

Contemporary FP may still be correlated with ε_{icb} in Equation (2) because of the existence of county-specific and time-variant factors. For example, in the Cultural Revolution, some counties might take more radical moves than others to recruit female members into the CCP and, at the same time, to push harder for gender equality in education. To deal with this issue, we use FP50 to instrument contemporary FP. Clearly, contemporary FP was highly correlated with FP50. To see if FP50 satisfies the exclusion restriction for instrumental variables, we note that FP50 could influence gender gaps of education of cohort *b* through the following three channels: (1) it was correlated with cohort *b*'s gender educational achievements through some long-lasting and unobservable cultural traits; (2) it changed the norms held by the parents of cohort *b* so they invested more in the cohort; and (3) it changed women's status, which could have a long-lasting effect through and beyond cohort *b*'s period of education, including (a) a persistent component that has never changed and (b) an evolving component that has changed over time. Apparently, the first channel is controlled by county fixed effects, and the second channel is summarized by the parents' educational levels. As for the third channel, the first component is also captured by county fixed effects because its formation predates our econometric system. The second component was not likely to be directly created by FP50 because FP50 did not change over time. Rather, it was more likely to be created by contemporary FP. But this is the very idea of instrumentation.

The fact that FP50 did not vary over time poses a challenge. Following Yao and You (2016), we create the following instrument for contemporary FP in year *b*, FP_b:

$$FP_{IV,b} = FP50 \times FP50 \times b$$

Because it is constructed from FP50, $FP_{IV,b}$ is correlated with FP_b as long as FP50 is correlated. Found by Yao and You (2016), the square of FP50, instead of FP50 itself, is adopted to simulate the convergence of FP over time. In a panel IV regression, our construction in effect assumes that the change of *FP* is correlated with FP50 squared. When contemporary *FP* takes its average of several years, $FP_{IV,b}$ also takes its average over the same years.

Table 5 presents the second-stage results of IV regressions for Equation (2). It also presents the first-stage F statistic for each regression. All of them are quite large, indicating that the instrument is not weak. Except for middle school graduation, FP still shows a significantly positive effect to reduce the gender gap in educational attainment, although the estimates are inflated, similar to many IV regressions. Regardless, the IV results qualitatively support our baseline panel results in most cases.

[Table 5 about here]

5.3 The Cultural Revolution

During the Cultural Revolution (1966–1976), Mao's radical ideas were put into practice. One of the ideas was to empower the once-disadvantaged groups, such as poor peasants, ordinary workers, and women. It was during this time that primary school enrollment increased the most dramatically. It is thus possible that the positive effects of FP that we have found was driven by the heterogeneous responses to Mao's call at the county level, not by the mechanisms implied by female political participation. To address this concern, we study people who were born between 1960 and 1968 (both inclusive) and were supposed to enroll in primary school during the Cultural Revolution. We still use Equation (2) as the model. The constructions of the sample for each educational choice and contemporary *FP* are the same as defined before. To account for county-level heterogeneous responses, we add in a linear time trend for each county.

Table 6 presents the main results of our concerns. The results for *Female FP* and their interaction term are qualitatively the same as the corresponding results reported by Table 4. Specifically, FP's effects to raise women's educational attainments relative to those of men become stronger. A different result now is that CCP membership is found to have positive effects for primary school enrollment and graduation, although its effects on educational choices beyond primary school are all significantly negative. It seems that, during the Cultural Revolution, counties with a more active CCP presence—and thus more likely to respond to Mao's call—was occupied by their efforts to promote primary education so their investment into higher levels of education was crowded out.

[Table 6 about here]

6. Conclusion

Women's liberation was an essential part of China's modernization process in the last century. The CCP exerted a significant influence to transform the role of women during its first 30 years of rule. Relying on the exogenous nature of the distribution of female party membership in the early 1950s, we have established a long-run and causal relationship from more female political participation and higher levels of women's educational attainment relative to men's. This result complements the positive findings obtained from India's political reservation programs and shows that female political participation has long-lasting effects to change societal perception about women.

Women's political participation has been progressing more slowly since the death of Mao in 1976. But the impacts of women liberation have remained. As the field experiment by Booth and others (2016) has revealed, Beijing women are more inclined to compete than Taipei women. This inclination is true for women born in all three years (1958, 1966, and 1977) that the experiment chose to study. So the social norms established before Mao's death were transmitted through time. This result reinforces our main conclusion that female political participation has long-lasting effects to change societal perception about women.

References

Alderman, Harold, and Elizabeth M. King. 1998. "Gender Differences in Parental Investment in Education." *Structural Change and Economic Dynamics* 9 (4): 453–68.

Ban, Radu, and Vijayendra Rao. 2008. "Tokenism or Agency? The Impact of Women's Reservations on Village Democracies in South India." *Economic Development and Cultural Change* 56 (3): 501–30.

Bauer, John, Wang Feng, Nancy E. Riley, and Zhao Xiaohua. 1992. "Gender Inequality in Urban China: Education and Employment." *Modern China* 18 (3): 333–70.

Beaman, Lori, Raghabendra Chattopadhyay, Esther Duflo, Rohini Pande, and Petia Topalova. 2009. "Powerful Women: Does Exposure Reduce Bias?" *Quarterly Journal of Economics* 124 (4): 1497–540.

Beaman, Lori, Esther Duflo, Rohini Pande, and Petia Topalova. 2012. "Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India." *Science* 335 (6068): 582–86.

Booth, Alison L., Elliott Fan, Xin Meng, and Dandan Zhang. 2016. "Gender Differences in Willingness to Compete: The Role of Culture and Institutions." CEPR Discussion Paper no. DP11629, Centre for Economic Policy Research, London.

Brollo, Fernanda, Tommaso Nannicini, Roberto Perotti, and Guido Tabellini. 2013. "The Political Resource Curse." *American Economic Review* 103 (5): 1759–96.

Chattopadhyay, Raghabendra, and Esther Duflo. 2004. "Women as Policy Makers: Evidence from a Randomized Policy Experiment in India." *Econometric*a 72 (5): 1409–43.

Clots-Figueras, Irma. 2011. "Women in Politics: Evidence from the Indian States." *Journal of Public Economics* 95 (7–8): 664–90.

———. 2012. "Are Female Leaders Good for Education? Evidence from India." *American Economic Journal: Applied Economics* 4 (1): 212–44.

Ferreira, Fernando, and Joseph Gyourko. 2014. "Does Gender Matter for Political Leadership? The Case of U.S. Mayors." *Journal of Public Economics* 112 (December): 24–39.

Guo, Di, Kun Jiang, Byung-Yeon Kim, and Chenggang Xu. 2014. "Political Economy of Private Firms in China." *Journal of Comparative Economics* 42 (2): 286–303.

Hannum, Emily, and Yu Xie. 1994. *Trends in Educational Gender Inequality in China: 1949–1985.* Ann Arbor, MI: University of Michigan.

Harvard Yenching Institute. 2007. CHGIS, Version 4. Cambridge, MA.

Kalsi, Priti. 2017. "Seeing Is Believing: Can Increasing the Number of Female Leaders Reduce Sex Selection in Rural India?" *Journal of Development Economics* 126 (May): 1–18.

Li, Hongbin, Pak Wai Liu, Junsen Zhang, and Ning Ma. 2007. "Economic Returns to Communist Party Membership: Evidence From Urban Chinese Twins." *The Economic Journal* 117 (523): 1504–20.

Orazem, Peter F., and Elizabeth M. King. 2007 "Chapter 55 Schooling in Developing Countries: The Roles of Supply, Demand, and Government Policy." *Handbook of Development Economics* 4: 3475–559.

Pande, Rohini. 2003. "Can Mandated Political Representation Increase Policy Influence for Disadvantaged Minorities? Theory and Evidence from India." *The American Economic Review* 93 (4): 1132–51.

Quisumbing, Agnes R., and John A. Maluccio. 2000. *Intrahousehold Allocation and Gender Relations: New Empirical Evidence from Four Developing Countries*. Washington: International Food Policy Research Institute.

Rawski, Evelyn Sakakida. 1979. *Education and Popular Literacy in Ch'ing China*. Ann Arbor, MI: University of Michigan Press.

Thomas, Sue, 1991. "The Impact of Women on State Legislative Policies." *The Journal of Politics* 53 (4): 958–76.

Walder, Andrew G. 1995. "Career Mobility and the Communist Political Order." *American Sociological Review* 60 (3): 309.

Yao, Yang, and Wuyue You. 2016. "Half Sky over China: Women's Political Participation and Sex Imbalances, 1950–1990." China Center for Economic Research Working Paper no. E2016009, Beijing.

Yen, Y. C. James. 1934. *The Ting Hsien Experiment.* Peiping: Chinese National Association of the Mass Education Movement.

Table 1. CCP and female party membership in selected years

	Nationwide			*Sample counties*	
Year	*CCP members (million)*	*Population share of CCP members (%)*	*Share of female members (%)*	*Population share of CCP members (%)*	*Share of female members (%)*
1950	5.00	0.89	11.85	0.85	8.55
1955	9.39	1.53	10.07	1.40	9.56
1965	18.71	2.58	11.52	2.18	11.46
1975	33.38	3.61	13.23	2.81	13.09
1976	35.08	3.74	13.53	2.91	13.19
1978	36.98	3.84	13.46	3.01	12.89
1981	39.66	3.96	13.42	3.14	12.23
1985	44.26	4.18	13.71	3.28	11.80
1987	47.76	4.37	14.17	3.46	11.67

Notes: National data are obtained from the CCP internal publication *The Materials: 1921–1997*, Volume 7. Data for sample counties are obtained from county chronicles and *The Materials* compiled by each county. County chronicles and *The Materials* were mainly compiled in the late 1980s and early 1990s, so records are only available until the late 1980s.

Table 2. Average schooling years by gender for adult population, 1950–1990

	Nationwide				*Sample counties*			
Year	*Total population*	*Female*	*Male*	*FMR*	*Total population*	*Female*	*Male*	*FMR*
1950	1.90	0.69	3.27	0.21	1.48	0.42	2.62	0.14
1955	2.37	1.05	3.80	0.28	1.82	0.65	3.01	0.19
1960	2.93	1.55	4.35	0.36	2.26	1.01	3.48	0.26
1965	3.37	2.00	4.85	0.44	2.74	1.48	3.96	0.34
1970	4.00	2.68	5.28	0.51	3.19	1.94	4.39	0.41
1975	4.60	3.32	5.84	0.57	3.71	2.44	4.93	0.46
1980	5.14	3.91	6.33	0.62	4.21	2.94	5.41	0.51
1985	5.70	4.68	6.77	0.68	4.78	3.61	5.89	0.59
1990	6.01	5.00	6.97	0.71	5.12	4.07	6.13	0.64

Notes: Schooling years are estimated from the 1990 census. The figures are average schooling years of the adult population (people age 18 and above) and by gender. FMR is the ratio between female average schooling years and male average schooling years.

Table 3. Long-term impacts of FP50 on gender educational gaps in 1990

Variables	*(1)* *Schooling years*	*(2)* *Literacy rate*	*(3)* *Primary school graduation*	*(4)* *Middle school graduation*	*(5)* *High school graduation*
FP50	0.208**	0.236***	0.190***	0.376***	0.325***
	(0.082)	(0.063)	(0.057)	(0.084)	(0.081)
CCP50	0.254	0.195	0.305	0.660	0.733*
	(0.412)	(0.314)	(0.285)	(0.419)	(0.406)
FMR50	0.196***	0.097***	0.083***	0.165***	0.185***
	(0.043)	(0.032)	(0.029)	(0.043)	(0.042)
EDU50	0.069***	0.024***	0.020***	0.018***	-0.0005
	(0.007)	(0.005)	(0.005)	(0.007)	(0.006)
Other county characteristics	Y	Y	Y	Y	Y
Obs.	896	896	896	896	896
R-squared	0.627	0.607	0.593	0.598	0.611

Notes: Standard errors clustered at the provincial level are in parentheses. Significance levels: * 10 percent, ** 5 percent, *** 1 percent. The dependent variables are the female-male ratios of schooling years, literacy rate, primary school graduation rate, middle school graduation rate, and high school graduation rate, respectively. Other county characteristics include log female-male ratio in total population, log per-capita industrial output value, share of rural residents, and share of Han, all measured in 1990, as well as a set of geographic variables that include distance to provincial capital, distance to the nearest treaty port, average altitude, percentage of hilly grounds, and provincial dummies.

Table 4. Results of panel regressions on individual data

Variables	*(1)* *Primary school enrollment*	*(2)* *Primary school graduation*	*(3)* *Middle school enrollment*	*(4)* *Middle school graduation*	*(5)* *High school enrollment*	*(6)* *High school graduation*
Female	-0.073***	-0.181***	-0.311***	-0.257***	-0.079***	-0.060***
	(0.011)	(0.016)	(0.018)	(0.017)	(0.007)	(0.008)
FP	-0.082	-0.520***	2.316***	0.571	-0.110	0.009
	(0.063)	(0.088)	(0.617)	(0.649)	(0.112)	(0.111)
FP × Female	0.194**	0.726***	1.123***	0.943***	0.317***	0.220***
	(0.081)	(0.119)	(0.138)	(0.134)	(0.053)	(0.063)
CCP	-0.981***	0.566*	-0.703***	-0.905***	-0.718	-1.465**
	(0.209)	(0.314)	(0.192)	(0.186)	(0.576)	(0.576)
Father's education	0.005***	0.012***	0.018***	0.017***	0.008***	0.007***
(years)	(0.0002)	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0002)
Mother's education	0.002***	0.008***	0.012***	0.013***	0.005***	0.005***
(years)	(0.0001)	(0.0003)	(0.0003)	(0.0004)	(0.0003)	(0.0003)
First child	0.008***	0.022***	0.039***	0.033***	0.020***	0.016***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Han	0.032***	0.040***	0.029**	0.027**	-0.0002	0.003
	(0.009)	(0.013)	(0.012)	(0.011)	(0.006)	(0.007)
Rural resident	-0.015***	-0.062***	-0.208***	-0.259***	-0.228***	-0.233***
	(0.003)	(0.007)	(0.009)	(0.010)	(0.008)	(0.008)
Female household head	0.003**	0.012***	0.047***	0.046***	0.015***	0.011**
	(0.002)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)
Household size	Y	Y	Y	Y	Y	Y
Parents' occupations	Y	Y	Y	Y	Y	Y
Other county characteristics	Y	Y	Y	Y	Y	Y
County fixed effects	Y	Y	Y	Y	Y	Y
Cohort fixed effects	Y	Y	Y	Y	Y	Y
Obs.	1,248,464	865,499	766,405	582,573	491,015	327,693
R-squared	0.190	0.205	0.209	0.215	0.160	0.165

Notes: Standard errors clustered at the county level are in parentheses. Significance levels: * 10 percent, ** 5 percent, *** 1 percent. Parents' occupations are defined on 10 dummies, respectively, for mother and father, standing for their occupational categories, such as agricultural work, technical work, administrative work, and others. Other county characteristics include log sex ratio in the population, log per-capita industrial output value, female-male ratio of average schooling years in the adult population, and average schooling years of the adult population.

Table 5. Results of panel regressions on individual data with IV approach

Variables	(1) Primary school enrollment	(2) Primary school graduation	(3) Middle school enrollment	(4) Middle school graduation	(5) High school enrollment	(6) High school graduation
Female	-0.266***	-0.454***	-0.382***	-0.196**	-0.122***	-0.0947***
	(0.060)	(0.083)	(0.094)	(0.085)	(0.032)	(0.036)
FP	-0.121	-1.192**	-3.504***	-3.302***	0.465	0.362
	(0.455)	(0.601)	(0.971)	(0.900)	(0.514)	(0.522)
FP × *Female*	1.830***	2.965***	1.719**	0.446	0.676**	0.503*
	(0.498)	(0.673)	(0.774)	(0.693)	(0.268)	(0.296)
CCP	-1.331***	0.418	6.213***	5.072***	-1.658	-2.149*
	(0.451)	(0.775)	(1.635)	(1.717)	(1.166)	(1.246)
Father's education	0.005***	0.012***	0.018***	0.017***	0.008***	0.007***
(years)	(0.0002)	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0003)
Mother's education	0.002***	0.008***	0.012***	0.013***	0.005***	0.005***
(years)	(0.0001)	(0.0003)	(0.0004)	(0.0004)	(0.0003)	(0.0003)
First child	0.008***	0.021***	0.039***	0.032***	0.020***	0.017***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Han	0.039***	0.049***	0.032**	0.031**	0.001	0.003
	(0.010)	(0.014)	(0.013)	(0.012)	(0.007)	(0.008)
Rural resident	-0.017***	-0.066***	-0.213***	-0.265***	-0.232***	-0.239***
	(0.003)	(0.007)	(0.009)	(0.010)	(0.008)	(0.008)
Female household head	0.003	0.010***	0.047***	0.046***	0.015***	0.013**
	(0.002)	(0.003)	(0.004)	(0.005)	(0.004)	(0.005)
First-stage F statistic	40.067	36.101	61.471	57.269	50.959	44.597
Household size	Y	Y	Y	Y	Y	Y
Parents' occupations	Y	Y	Y	Y	Y	Y
Other county characteristics	Y	Y	Y	Y	Y	Y
County fixed effects	Y	Y	Y	Y	Y	Y
Cohort fixed effects	Y	Y	Y	Y	Y	Y
Obs.	1,095,364	764,771	678,209	517,506	435,858	291,137
R-squared	0.162	0.188	0.203	0.210	0.161	0.169

Notes: Standard errors clustered at the county level are in parentheses. Significance levels: * 10 percent, ** 5 percent, *** 1 percent. Parents' occupations are defined on ten dummies, respectively, for mother and father, standing for their occupational categories, such as agricultural work, technical work, administrative work, and others. Other county characteristics include log sex ratio in the population, log per-capita industrial output value, female-male ratio of average schooling years in the adult population, and average schooling years of the adult population.

Table 6. Panel regressions on individual data for the period of Cultural Revolution

Variables	*(1) Primary school enrollment*	*(2) Primary school graduation*	*(3) Middle school enrollment*	*(4) Middle school graduation*	*(5) High school enrollment*	*(6) High school graduation*
Female	-0.101***	-0.182***	-0.281***	-0.240***	-0.074***	-0.061***
	(0.014)	(0.019)	(0.023)	(0.022)	(0.008)	(0.008)
FP	-0.268***	-0.494***	-0.896	-0.447	-0.619	-0.563
	(0.0928)	(0.116)	(0.598)	(0.598)	(0.747)	(0.701)
FP × *Female*	0.334***	0.754***	1.011***	0.878***	0.296***	0.243***
	(0.106)	(0.137)	(0.174)	(0.165)	(0.067)	(0.063)
CCP	0.923*	1.191*	-10.220***	-10.160***	-6.605*	-6.360*
	(0.523)	(0.657)	(2.981)	(2.969)	(3.727)	(3.754)
County fixed effects	Y	Y	Y	Y	Y	Y
Cohort fixed effects	Y	Y	Y	Y	Y	Y
County-specific time trends	Y	Y	Y	Y	Y	Y
Obs.	285,502	285,502	283,878	283,878	283,176	283,176
R-squared	0.951	0.890	0.670	0.629	0.275	0.271

Notes: Standard errors clustered at the county level are in parentheses. Significance levels: * 10 percent, ** 5 percent, *** 1 percent. The control variables are the same as those in Tables 4 and 5. Their results are not shown to save space.

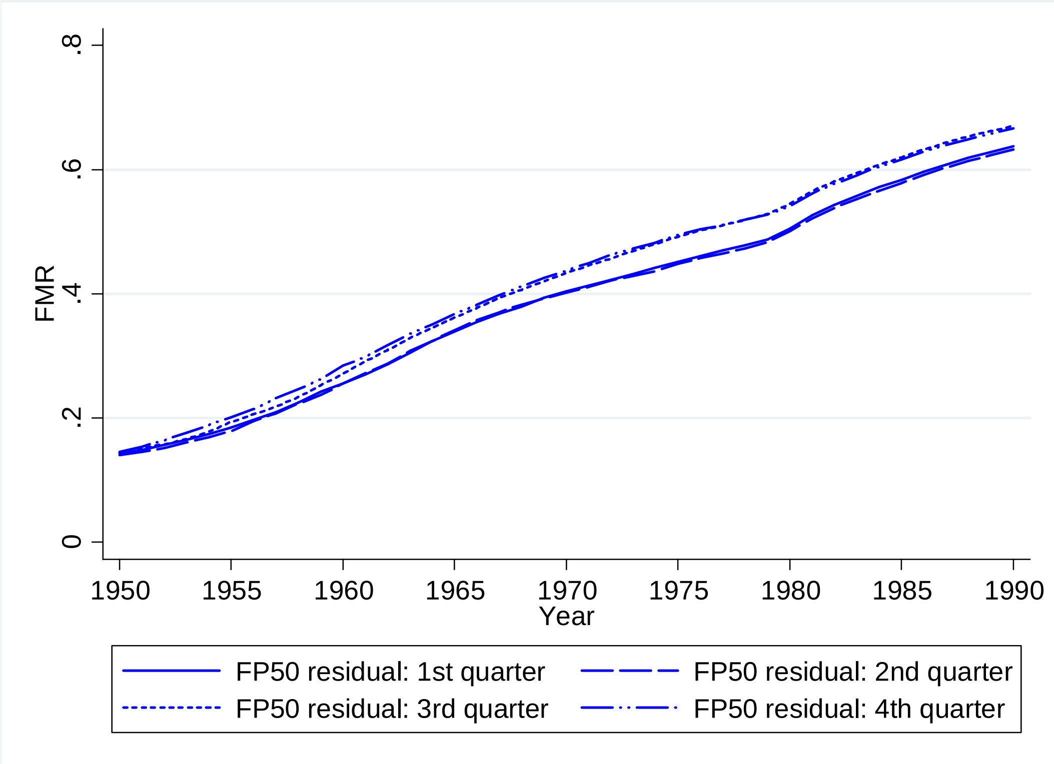

Figure 1. FP50 and the gender ratio of schooling years from 1950 to 1990

Note: We divide the sample counties into four equal-number groups by the FP50-residual quarter. The FP50-residual is obtained by regressing FP50 on CCP50, log female-male ratio in total population, average schooling years of the adult population, and log per-capita industrial output value, all measured in 1950, as well as the set of geographical variables listed in the Appendix and provincial dummies. For each group, we respectively show its FMR of schooling years in each year through 1950 to 1990.

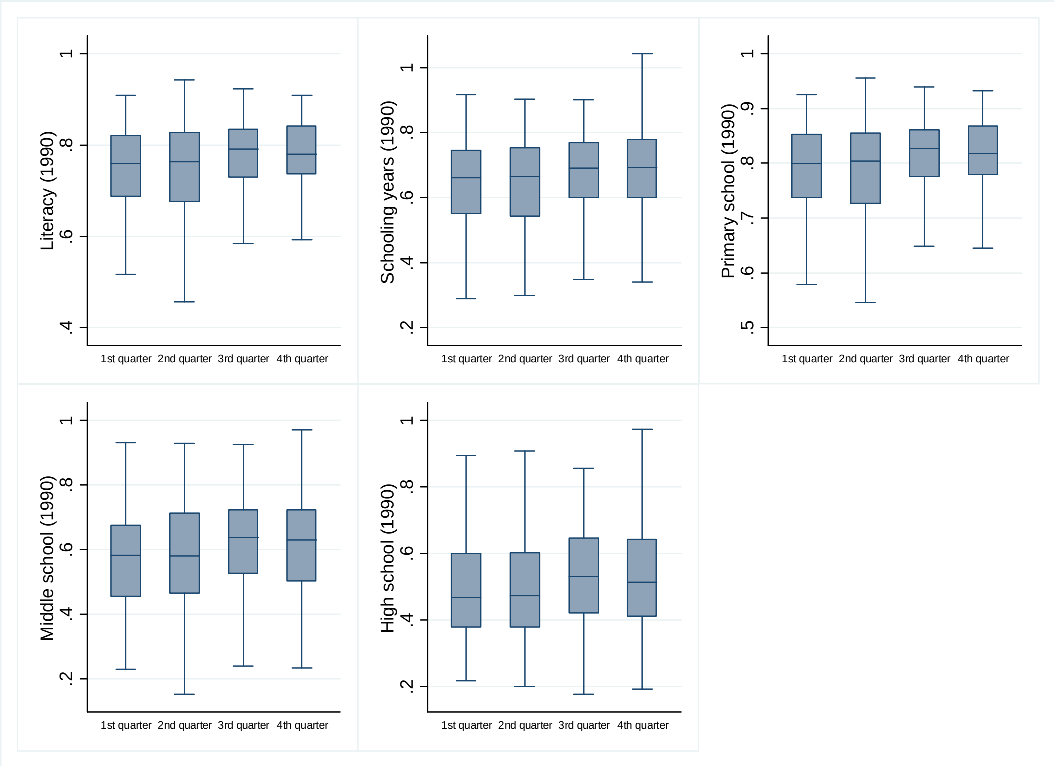

Figure 2. Long-term impacts of FP50 on gender educational inequality in 1990

Note: The four quarters are defined the same as in Figure 1. The five panels make comparisons of the FMR among the four quarters in terms of the literacy rate, schooling years, completion of primary school, completion of middle school, and completion of high school in 1990, respectively. The outside values are excluded.

Appendix. Summary Statistics of Variables

County-level variables (from county chronicles, *The Materials*, the 1990 census, the 1 percent sample of the 1990 census)

Whole Sample					
Variables	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
FP50 (Female CCP/CCP)	1,076	0.085	0.056	0.000	0.296
CCP50 (CCP/Pop)	1,569	0.008	0.013	0.000	0.121
FMR50 (female-male ratio of schooling years in 1950)	1,642	0.138	0.111	0.000	0.750
EDU50 (average schooling years of adult population)	1,656	1.483	0.786	0.000	6.440
Per-capita industrial output in 1950 (yuan)	1,490	17.150	30.833	0.000	691.258
Female-male ratio in the population in 1950	1,469	0.949	0.104	0.492	1.632
FMR of schooling years in 1990	1,656	0.637	0.174	0.000	1.042
FMR of literacy rate in 1990	1,710	0.737	0.131	0.166	0.944
FMR of primary school completion rate in 1990	1,710	0.779	0.119	0.197	0.956
FMR of middle school completion rate in 1990	1,710	0.597	0.156	0.151	0.971
FMR of high school completion rate in 1990	1,710	0.520	0.154	0.175	1.060
FMR of schooling years	67,810	0.392	0.222	0.000	2.000
Population mean schooling years	67,896	3.254	1.678	0.000	10.438
FP (Female CCP/CCP)	47,481	0.116	0.038	0.000	0.539
CCP (CCP/Pop)	63,667	0.024	0.013	0.000	0.490
Per-capita industrial output (yuan)	61,654	118.696	299.178	0.000	10,551.330
Female-male ratio in the population	67,254	0.951	0.076	0.416	1.676
Share of Han	1,710	0.874	0.255	0.005	1.000
Share of rural residents	1,709	0.881	0.089	0.147	0.983
Distance to provincial capital (km)	1,725	204.707	120.293	6.292	973.964
Distance to nearest treaty port (km)	1,725	319.898	241.644	3.353	1,645.418
Altitude (km)	1,727	0.658	0.778	0.001	4.352
Share of hilly grounds	1,727	0.637	0.273	0.016	1.000

Notes: The number of time-varying observations is counted by county-year, and the number of time-invariant observations is counted by county.

Sub-Sample with non-missing FP					
Variables	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
FP50 (Female CCP/CCP)	1,076	0.085	0.056	0.000	0.296
CCP50 (CCP/Pop)	1,278	0.009	0.014	0.000	0.121
FMR50 (female-male ratio of schooling years in 1950)	1,307	0.141	0.109	0.000	0.724
EDU50 (average schooling years of adult population)	1,319	1.493	0.769	0.000	6.189
Per-capita industrial output in 1950 (yuan)	1,207	16.529	30.864	0.000	691.258
Female-male sex in 1950	1,176	0.947	0.101	0.508	1.632
FMR of schooling years in 1990	1,319	0.646	0.169	0.000	1.042
FMR of literacy rate in 1990	1,356	0.743	0.126	0.166	0.944
FMR of primary school completion rate in 1990	1,356	0.784	0.114	0.197	0.956
FMR of middle school completion rate in 1990	1,356	0.598	0.155	0.151	0.971
FMR of high school completion rate in 1990	1,356	0.519	0.153	0.175	1.060
FMR of mean schooling years	45,320	0.393	0.216	0.000	2.000
Population mean schooling years	45,345	3.241	1.615	0.000	9.285
FP (Female CCP/CCP)	47,481	0.116	0.038	0.000	0.539
CCP (CCP/Pop)	46,655	0.024	0.012	0.000	0.150
Per-capita industrial output (yuan)	43,902	115.144	283.873	0.000	9,628.339
Female-male ratio in the population	44,979	0.952	0.073	0.454	1.632
Share of Han	1,356	0.882	0.248	0.005	1.000
Share of rural residents	1,355	0.884	0.085	0.147	0.983
Distance to provincial capital (km)	1,369	202.198	116.318	6.292	973.964
Distance to nearest treaty port (km)	1,369	313.740	233.508	3.353	1,612.471
Altitude (km)	1,368	0.623	0.747	0.001	4.352
Share of hilly grounds	1,368	0.629	0.274	0.023	1.000

Notes: The number of time-varying observations is counted by county-year, and the number of time-invariant observations is counted by county.

Individual-level variables (from the 1 percent sample of the 1990 census)

Variables	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Primary school enrollment dummy	4,726,918	0.931	0.253	0	1
Primary school graduation dummy	4,726,918	0.641	0.480	0	1
Middle school enrollment dummy	4,726,918	0.513	0.500	0	1
Middle school graduation dummy	4,726,918	0.422	0.494	0	1
High school enrollment dummy	4,726,918	0.277	0.448	0	1
High school graduation Dummy	4,726,918	0.259	0.438	0	1
Female dummy	4,726,918	0.471	0.499	0	1
Education of father (years)	4,327,213	6.242	3.750	0	16
Education of mother (years)	4,528,906	4.076	3.888	0	16
Female household head dummy	4,726,918	0.119	0.324	0	1
First or last or only child dummy	4,726,918	0.780	0.414	0	1
Han ethnic dummy	4,726,918	0.924	0.266	0	1
Rural resident dummy	4,726,918	0.851	0.356	0	1
Household size	4,726,918	5.013	1.679	1	20