Medals and Mindsets: How Women's Olympic Competitiveness Advances Gender Equality*

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Abstract

Can female athletic success reshape beliefs about women's competitive capacity and advance gender equality? We study this question in the context of China's return to the Olympics, combining comprehensive athlete records from 1984–2004 with detailed census data. Exploiting variation in the timing of each prefecture's first female Olympic medalist and differential exposure across birth cohorts, we find that hometown female medalists significantly narrow gender gaps in educational attainment, while male medalists produce no comparable effects. To address potential endogeneity, we employ a Bartik-style instrument leveraging the 1991 Soviet collapse as an exogenous shock to medal opportunities across sports. We further show that media coverage framing female achievements as evidence of women's competitiveness helps explain these effects, and that female medalists shift fathers' beliefs about daughters' competitive capacity rather than directly inspiring girls. Taken together, our findings suggest that publicized female success can challenge gender stereotypes and promote equality.

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1. Introduction

The belief that women are less capable in competitive environments continues to reinforce gender inequality across education, labor markets, and household decision-making (Niederle and Vesterlund 2007; Buser, Niederle, and Oosterbeek 2014; Flory, Leibbrandt, and List 2015; Blau and Kahn 2017; Bordalo, Coffman, Gennaioli, and Shleifer 2019; Carlana 2019). Sporting events featuring female athletes offer a rare opportunity to challenge this stereotype by displaying women's strength, discipline, and ability to excel in competition. However, little is known about whether–and through what channels–female athletic success can reshape beliefs about women's competitiveness and promote broader gender equality.

In this study, we focus on the Olympic Games–the most influential global arena for athletic competition. The Olympics bring together elite athletes from more than 200 countries, competing for medals before a worldwide audience of billions. This unparalleled visibility generates intensive media coverage and public attention, creating a unique setting to observe how female athletic success shapes social perceptions. Since their inception, the Games have undergone a profound transformation: from the complete exclusion of women in 1896 to near gender parity by 2024, with female athletes now competing and winning medals across nearly all disciplines.

We examine whether female Olympic success affects gender inequality in education. We focus on education for two main reasons. First, educational attainment is closely tied to beliefs about competitiveness. A large body of evidence shows that perceptions of women as less competitive underlie gender disparities in educational and occupational choices (Niederle and Vesterlund 2011; Buser, Niederle, and Oosterbeek 2014). Second, parents play a central role in shaping children's educational investments, and their gendered perceptions of competitiveness contribute to educational inequality (Tungodden and Willén 2023). The success of female Olympic athletes may shift these beliefs by providing highly visible and credible evidence of women's ability to excel in elite competition, thereby narrowing gender gaps in educational attainment.

We investigate this hypothesis in the context of China's return to the Olympic Games in 1984, a setting that offers several distinct advantages. Unlike countries with continuous participation–where the growth of women's sports and progress in gender equality evolved together–China had been absent from the Olympics for more than three decades due to Cold War tensions, and therefore had no influence on the Olympic movement itself.[1] China's reintegration in 1984 thus introduced a sudden and exogenous exposure

[1]For example, Title IX of the U.S. Education Amendments of 1972 exemplifies this entanglement: it simultaneously expanded female athletic participation and reflected growing commitment to gender equality.

to international women's sports for domestic audiences. At the time, Chinese society exhibited deep-rooted gender bias, particularly in education. Moreover, the Chinese education system functions as a multi-tiered tournament, in which advancement to elite secondary schools and universities depends on intense competition in entrance examinations. In this context, parental beliefs about children's competitiveness are especially consequential for educational outcomes.

While Olympic victories spark national celebration, their influence is especially strong in athletes' hometowns, where local pride, media coverage, and community identification amplify exposure to female competitive success. We construct a dataset linking Chinese Olympic medalists to gender-related outcomes in their hometowns. The dataset includes all Chinese Olympic athletes from 1984 to 2004–the period beginning with China's return to the Games and ending just before the 2008 Beijing Olympics. For each athlete, we record gender, sport, competition year, medal type, and hometown prefecture. We then link these data to the 2015 1% Population Mini-Census, which reports detailed information for over one million individuals, including educational attainment and birth prefecture. This linkage allows us to examine how exposure to female Olympic success affected gender disparities across regions and cohorts.

Our empirical strategy exploits two complementary sources of variation. First, we use within-prefecture variation across cohorts, comparing individuals who were still making educational decisions with those who had completed schooling when their hometown produced its first female Olympic medalist. Specifically, we define the *Medal Cohort* as individuals who were age 18 or younger when their prefecture first produced a female medalist. The age 18 cutoff reflects that individuals below this threshold are typically still making schooling choices and thus more responsive to external influences, whereas older cohorts have largely completed their education. We verify the robustness of our results using alternative cutoffs (ages 6, 12, and 15) and a continuous measure of exposure duration. This structure allows us to compare individuals from the same prefecture who experienced local female Olympic success at different points in their educational trajectories.

Second, we exploit variation in the timing of each prefecture's first female Olympic medal, which differed widely across regions between 1984 and 2004. Our sample includes 91 prefecture-level cities that had produced at least one female medalist by 2004, providing substantial regional variation in the timing of first successes. Using this staggered timing, we implement a two-way fixed-effects (TWFE) model to estimate the impact of female Olympic success on gender disparities in educational attainment and related outcomes.

Using the two-way fixed-effects specification, we find that exposure to female Olympic

medalists significantly improves gender-equality outcomes. Experiencing a female medalist during the educational decision window increases women's years of schooling by about 0.32 relative to men— roughly one-third of the baseline gender gap of 0.97 years among cohorts born before China's 1984 return to the Olympics. These effects are specific to female medalists: exposure to male medalists yields no comparable changes, underscoring that the results reflect the influence of female athletic achievement rather than general Olympic success or regional development associated with producing medal winners.

To explore the sources of the educational gains, we examine two distinct channels: *transitions*, reflecting whether more girls advance to higher school tiers, and *dropouts*, capturing whether fewer girls leave school before completion. The transition rate measures advancement to the next educational stage conditional on completing the previous one, while the dropout rate is defined as exiting before completion conditional on enrollment. The results indicate that the effects of female medalist exposure operate primarily through the transition channel. Girls in exposed prefectures are significantly more likely to enroll at key transition points—by 4.5 percentage points at junior high (a 5.1% increase) and 1.9 percentage points at senior high (a 4.5% increase)—precisely where China's competitive tracking begins and families make high-stakes schooling decisions. In contrast, we find little change in dropout rates at any educational stage.

The main identification concern is that the emergence of female medalists may not be fully exogenous. One potential threat arises from time-varying factors that simultaneously influence a region's likelihood of producing female Olympians and its local gender-equality outcomes. Another is reverse causality: regions experiencing faster economic growth might invest more in women's sports while also exhibiting concurrent improvements in gender outcomes, thereby confounding the estimated effects.

To address these identification concerns, we construct an instrumental variable at the prefecture–Olympic-year level that captures exogenous variation in each prefecture's potential to win female Olympic medals. The instrument follows a Bartik-style approach, combining pre-determined prefecture characteristics with external shocks generated by the dissolution of the Soviet Union. Before 1991, the Soviet Union dominated women's Olympic events through a centralized, state-sponsored athletic system. Its sudden collapse created a global competitive vacuum that substantially altered medal prospects, particularly for China. The resulting shift varied across sports: disciplines formerly dominated by Soviet athletes experienced greater new opportunities, while those with weaker Soviet presence changed little. Consequently, the magnitude of this exogenous shock differed across prefectures according to their pre-existing strengths across sports.

To operationalize this approach, we measure each prefecture's pre-existing sports specialization using medalist data from China's 1983 National Games–held just before the country's full Olympic reintegration. We then interact these fixed local strengths with time-varying Soviet female participation rates by sport to generate predicted medal opportunities for each prefecture in each Olympic year. The instrument therefore captures how the Soviet Union's collapse reshaped China's medal prospects across regions, depending on their historical composition of sports strengths.

The key identifying assumption in our Bartik instrumental-variables strategy is that changes in Soviet participation rates were exogenous to gender-equality trends across Chinese prefectures (i.e., "shift-view"). We interpret the Soviet collapse as an external shock that affected China's medal opportunities but was unrelated to local social or cultural dynamics. We assess this assumption using several validation exercises–including balance checks, pre-trend analyses, and robustness tests with alternative specifications–all of which consistently support our identification strategy.

Our IV estimates align closely with the baseline results, showing statistically significant and economically meaningful effects of female medalists in reducing gender gaps in education. Exposure to female Olympic success increases women's schooling by about 0.71 years relative to men–an effect comparable in magnitude to the fixed-effects estimates. Applying analogous instruments for male medal exposure yields no significant effects on gender-equality outcomes, reinforcing that the observed impacts stem specifically from female Olympic achievement.

Having established a causal link between female Olympic success and reduced gender inequality, we next examine the mechanisms driving this relationship. We posit that such achievements challenge stereotypes about women's competitiveness by providing highly visible and credible evidence of success in the most demanding arenas. Two main channels may underlie this effect. First, media coverage amplifies female athletes' accomplishments and disseminates new information about women's competitive ability to broad audiences, potentially reshaping social beliefs about gender and competition. Second, exposure to female success may directly influence parental perceptions of their daughters' competitiveness, prompting greater educational investment in girls. We investigate these mechanisms through analyses of media coverage patterns of medalists and survey data on parental beliefs and educational investments.

To examine the media channel, we analyze how Olympic medalists were portrayed in *People's Daily*, China's most authoritative newspaper during our study period. We quantify coverage along two dimensions: reporting intensity and thematic framing. Specifically, we distinguish between *competitive-equality* themes, which highlight women's competitive capabilities and equal potential for success, and *national-pride* themes,

which emphasize collective achievement and national glory. The analysis shows that male and female medalists receive comparable overall coverage, but female athletes are significantly more likely to be framed through a competitive-equality lens. Moreover, among female medalists, stronger competitive-equality framing produces larger improvements in local gender outcomes than greater coverage intensity alone, indicating that the interpretation of female success matters more than its visibility.

We next examine whether exposure to female Olympic success shifts parental beliefs and household investment decisions. Using representative household surveys–the China Family Panel Studies (CFPS) and the China Household Income Project (CHIP)—we document two main patterns. First, fathers exposed to hometown female medalists hold higher educational expectations for daughters relative to sons, with no comparable effects observed for mothers. This asymmetry suggests that female Olympic success primarily challenges fathers' stereotypes about daughters' competitiveness, consistent with evidence that paternal biases shape gender-differentiated investments (Tungodden and Willén 2023). Second, these shifts in belief translate into changes in household spending: hometown female medalists reduce gender gaps in education-related expenditures, as parents increase tuition and training spending on daughters relative to sons while keeping non-educational spending unchanged. Notably, we find no direct effects on girls' own self-perceptions or aspirations, including their educational expectations, self-assessed competence, or career goals.

Our paper contributes to several strands of economic research. First, we add to the literature on gender differences in competitiveness and their role in sustaining gender inequality. A substantial body of work shows that women are systematically less likely than men to enter and persist in competitive settings, helping explain persistent gender gaps in educational choices, career outcomes, and earnings (Niederle and Vesterlund 2007; Niederle and Vesterlund 2011; Buser, Niederle, and Oosterbeek 2014; Reuben, Wiswall, and Zafar 2017; Buser, Niederle, and Oosterbeek 2024; Kang, Lei, Song, and Zhang 2024).[2] Growing evidence highlights that these differences are shaped by stereotypes and beliefs held by individuals, parents, teachers, and the wider social environment (Carlana 2019; Bordalo, Coffman, Gennaioli, and Shleifer 2019). Parental beliefs appear especially influential: Tungodden and Willén (2023) show that parents hold gender-differentiated beliefs about their children's competitiveness, which substantially affect educational choices, particularly for daughters.

We build on this literature by showing that elite women's sports can *change* parents' perceptions of their daughters' competitiveness and potential–demonstrating that such

[2]Niederle and Vesterlund (2007) demonstrate in laboratory experiments that women are less likely to choose tournament-style compensation even when they perform as well as men. Buser, Niederle, and Oosterbeek (2014) show that competitive preferences predict gender differences in high school track choices and subsequent educational outcomes.

beliefs are malleable rather than fixed–and that media coverage plays a critical role in transmitting these belief changes.

Second, we also contribute to the growing literature on the socioeconomic impacts of global sporting events. Prior research has primarily examined the economic consequences of the Olympic Games–such as growth, employment, infrastructure, and trade (Bernard and Busse 2004; Rose and Spiegel 2011; Brückner and Pappa 2015)—although Baade and Matheson (2016) find that these effects are typically modest and short-lived. Other studies document temporary improvements in well-being or environmental quality (Kavetsos and Szymanski 2010; Chen, Jin, Kumar, and Shi 2013; Dolan, Kavetsos, Krekel, Mavridis, Metcalfe, Senik, Szymanski, and Ziebarth 2019), and more recent evidence shows that national football victories can build social cohesion and reduce ethnic divisions (Depetris-Chauvin, Durante, and Campante 2020). We enrich this literature by identifying persistent, non-economic effects of Olympic success: demonstrating that sporting achievements can reshape social beliefs and narrow gender inequality–core dimensions of long-term societal change.

Third, we contribute to the literature on the media's role in shaping social attitudes by examining not only what content is presented but how it is framed. Prior research shows that media exposure can substantially influence gender-related outcomes: television improved women's social status in India (Jensen and Oster 2009), soap operas reduced fertility in Brazil (La Ferrara, Chong, and Duryea 2012), reality television lowered teen pregnancy rates in the United States (Kearney and Levine 2015), and information campaigns increased female labor-force participation in Saudi Arabia (Bursztyn, González, and Yanagizawa-Drott 2020).[3] We advance this literature by showing that *how* athletic achievements are framed–specifically, whether female victories emphasize competitive capability and excellence–has greater influence on gender attitudes and outcomes than the sheer intensity of media coverage.[4]

Finally, our findings relate to but are conceptually distinct from traditional role-model effects, which show that exposure to successful individuals sharing similar characteristics can reshape beliefs and influence behavior (Dee 2004; Carrell, Page, and West 2010; Beaman, Duflo, Pande, and Topalova 2012; Porter and Serra 2020;). Role-model effects typically operate through individual-level identification, often involving direct contact or targeted interventions within specific settings. A parallel developed study

[3]More broadly, media exposure has been shown to shape attitudes and behaviors across diverse contexts, including political participation (Gentzkow 2006; Enikolopov, Petrova, and Zhuravskaya 2011; Yanagizawa-Drott 2014; Adena, Enikolopov, Petrova, Santarosa, and Zhuravskaya 2015), social capital formation (Olken 2009), consumption choices (Bursztyn and Cantoni 2016), and violent behavior (Dahl and DellaVigna 2009). DellaVigna and Gentzkow (2010) provide a comprehensive review.

[4]The importance of shifting beliefs is also highlighted by Caria, Crepon, Krafft, and Nagy (2025), who show that interventions providing information and reducing practical barriers had limited effects on female employment in Egypt when underlying gender norms remained unchanged.

by Guo, Ling, and Wen (2025) finds that female Olympic success reduces preference for boys in fertility decisions in China using two waves of provincial survey data before and after the 2016 Olympics, interpreting the effect as role-model driven. In contrast, our evidence indicates broader social transmission: widely publicized displays of female competitive success influence not only young women's self-perceptions but also parental beliefs and investment decisions that shape girls' opportunities.

2. Institutional Background

2.1. Gender Equality in the Olympic Games

The modern Olympic Games constitute the world's largest international sporting event, bringing together more than 11,000 athletes from over 200 nations to compete across 33 sports. Beyond athletic performance, the Olympics serve as a global cultural platform watched by more than 3 billion viewers worldwide and heavily covered by international media. Their unparalleled reach and visibility make them a potential arena for transmitting values and beliefs, influencing how societies perceive competition, excellence, and gender roles.

The early history of the Olympic Games reflected deeply entrenched gender stereotypes that constrained women's participation in sport. When the modern Olympics began in 1896, female athletes were entirely excluded, consistent with prevailing views of women's fragility and social roles. Although 22 women competed across five sports in 1900, their involvement remained minimal for decades. The International Olympic Committee emphasized "grace and beauty" over strength or endurance, admitting figure skating and tennis but excluding track and field until 1928. Consequently, women's participation rose only gradually–from 2.2% in 1900 to 13% by 1960–underscoring the persistence of gendered assumptions about athletic ability.

The movement toward gender equality in the Olympics was driven largely by domestic policy reforms in Western nations and the institutional responses of the International Olympic Committee (Brake 2010). Most notably, Title IX of the U.S. Education Amendments of 1972 prohibited sex discrimination in education and greatly expanded women's athletic opportunities. These national reforms, together with broader women's rights movements, prompted the IOC to increase women's events from roughly 50 in 1972 to over 150 by 2000. Female participation rose correspondingly–from 23% at the 1984 Los Angeles Games to 34% in 1996 and approaching parity by 2024. Beyond numerical gains, participation also diversified as women entered events once viewed as beyond their physical capacity, including the marathon (added in 1984), weightlifting (2000), and boxing (2012).

China was not a driver of this transformation but was instead shaped by it. Having

withdrawn from the International Olympic Committee in 1958 amid Cold War tensions, China remained outside the Olympic movement for more than two decades and did not return until 1984. For Chinese audiences, the Olympics arrived not merely as a major sporting event but as an exogenous cultural shock that introduced a highly visible platform for showcasing women's competitive excellence. This distinct trajectory makes China a compelling setting for studying how female Olympic success influences gender equality.

2.2. China and the Olympic Games

China withdrew from the International Olympic Committee over disputes regarding Taiwan's representation. After Olympic membership was restored in 1979, China's participation in the 1984 Los Angeles Games marked a renewed engagement with the international community and a deliberate effort to project modernization through sport (Hong 2013).

China's athletic system adopted the Soviet model of state-sponsored sports development, combining centralized planning with decentralized provincial implementation. Provincial and municipal governments invested in sports development to compete for national recognition, specializing in different disciplines based on local infrastructure and geographic advantages (Li, Meng, and Wang 2009).[5] Athletes excelling in provincial competitions, particularly the National Games, were selected for the national team to represent China internationally.

Having remained largely isolated from Olympic competition before the reform era, China quickly embraced the Olympics as both a symbol of national progress and a tool of installing national pride. This rapid transformation created a unique cultural phenomenon in which an imported sporting institution became central to Chinese national identity, reshaping traditional values.

A key aspect of this cultural phenomenon is that Olympic athletes often become national celebrities, with their life stories, training journeys, and personal philosophies attracting broad public attention (Lu 2011). Medalists receive extensive coverage across state and local media, where their achievements are framed as expressions of national pride and personal excellence.

Olympic medalists also attract exceptional attention and recognition in their home regions. During the 2024 Paris Olympics, cities with medal-winning athletes showed substantially higher public engagement with Olympic content. As illustrated in Appendix Figure A1, these cities recorded significantly greater Baidu search volumes

[5]For example, coastal provinces such as Guangdong developed strong diving programs, Hubei and Hunan focused on gymnastics and badminton, while northern provinces like Heilongjiang specialized in winter sports.

for "Olympics" compared with cities without medalists, suggesting that local athletic success generates strong spillover effects on community interest in international sports events.

2.3. The Soviet Collapse and China's Olympic Opportunity

The dissolution of the Soviet Union in December 1991 marked one of the most consequential geopolitical shifts of the late twentieth century, transforming global politics and reshaping international sport. The collapse dismantled the world's most successful state-sponsored athletic system, opening unprecedented space for new Olympic powers–most notably China.

Before 1991, the Soviet Union dominated Olympic competition through a centralized sports system established in the 1920s to serve both physical and ideological goals (Parks 2016). Designed to showcase socialist superiority, this model emphasized early talent identification, full-time professional training, and heavy state investment in scientific support and facilities. Between 1952 and 1988, Soviet athletes topped the Olympic medal tables at six of ten Games, excelling across major sports.

The Cold War further politicized Olympic contests. Following the Soviet invasion of Afghanistan, the U.S. led a boycott of the 1980 Moscow Olympics, and the Soviet Union reciprocated at Los Angeles in 1984. These actions demonstrated how Olympic performance had become an extension of global rivalry.

Soviet dissolution abruptly fractured this athletic empire. Newly independent republics lacked the resources to maintain elite training infrastructure, leading to decaying facilities, staff departures, and declining participation (O'Mahony 2006). Athlete representation fell from 481 in 1988 to 390 in 1996, a drop from 5.7% to 3.8% of total competitors–with women's participation nearly halved. Because Olympic qualification demands strict performance benchmarks, these figures illustrate a sharp loss of competitive capacity.[6]

The Soviet collapse created a global vacuum, especially in state-intensive sports such as gymnastics, weightlifting, and track and field. As the centralized Soviet system disintegrated, the distribution of Olympic success shifted: China's total medal count doubled—from about 30 in Seoul 1988 to roughly 60 in Sydney 2000 and Athens 2004—while Soviet/Russian totals fell from about 113 to around 90. Over the same period, U.S. performance remained broadly stable at about 90–110 medals. Appendix Figure A2 illustrates this transition.

[6]According to IOC and federation regulations, qualification depends on meeting event-specific performance standards or advancing through major tournaments such as World Championships.

2.4. China's Educational System as a Multi-Tiered Tournament

The success of Chinese female athletes may reshape parental beliefs about daughters' competitive capacity and influence how parents invest in their education. This effect is likely to be particularly salient in China's highly selective, exam-driven education system, where differences in parental expectations can lead to substantial variation in children's educational outcomes.

China's education system functions as a multi-tiered tournament comprising four sequential stages: primary school (grades 1–6), junior high school (grades 7–9), senior high school (grades 10–12), and college. Advancement beyond junior high requires passing a high-stakes examination, the *Zhongkao* (High School Entrance Exam), with admission determined strictly by test scores. Students who advance to senior high school subsequently take the *Gaokao* (National College Entrance Exam) three years later—the sole pathway to college admission. These examinations act as high-stakes filters: only strong performers can progress to the next tier, making the system intensely competitive.

Whether students advance to the next educational level depends on both parental decisions and academic performance, though the relative importance of these factors varies across stages. At the junior and senior high school transitions, parents play a particularly active role by deciding whether to continue investing in their child's education or to pursue alternative paths. These decisions hinge on parents' assessments of their child's competitive capacity and the perceived returns to further education. Given the high stakes and substantial costs involved, parents who believe their child cannot compete successfully in entrance examinations may redirect them toward vocational training or early labor market entry. For example, parents who doubt their child's prospects for college admission may opt against enrolling them in senior high school to avoid the costs of continued schooling. Thus, secondary education marks a critical juncture where competitive tracking begins and families make key investment decisions based on perceived competitiveness.

At the transition to college, academic performance becomes the dominant factor. Parents who have already invested in senior high school generally support further study, but college admission is determined almost entirely by *Gaokao* scores, leaving limited scope for parental discretion.

3. Data

3.1. Data and Sample

We employ multiple datasets to examine the relationship between female Olympic athletes' achievements and socioeconomic outcomes in their hometowns. Our data sources include:

Olympic Performance Data. We construct a comprehensive database of Chinese Summer Olympic participation from 1984 to 2016 using official records from the International Olympic Committee and supplementary sources including the Baidu Encyclopedia and Wikipedia. Our dataset contains 3,047 athlete-year-sport observations covering 2,264 unique athletes who won 782 medals. For each athlete, we collect demographic information including hometown, birth year, gender, physical characteristics, and competitive achievements such as medals and rankings.

Our main analysis focuses on six Summer Olympics from 1984 to 2004, excluding the 2008 Beijing Olympics due to home field advantage. For mechanism analysis, we additionally collect medal records and athlete information from China's participation in 12 Winter Olympics from 1980 to 2022.

Population Census. Our primary analytical data source is China's 2015 1% Population Mini-Census, a large-scale survey containing detailed information on approximately 13 million representative individuals. The census provides individual-level data on educational attainment, employment, occupation, and demographic characteristics, enabling us to construct measures of gender gaps across cohorts and hometown regions. Additionally, we use China's 2005 1% Population Mini-Census to construct pre-treatment classifications of high-income and male-dominated industries based on average wages and gender composition.[7]

Social Attitudes and Behavior. We supplement census data with two nationally representative surveys. The Chinese General Social Survey (CGSS 2010) provides direct measures of gender attitudes. The Chinese Household Income Project (CHIP 1988, 1995, 1999) contains detailed household expenditure data that allow us to examine differential investment in children of different genders.

Media Coverage. To measure Olympic coverage intensity, we analyze 52,932 Olympic-related articles from the People's Daily (1946-2004), including 14,646 that specifically mention individual medalists. As China's primary state newspaper with nationwide circulation, the People's Daily provides a comprehensive measure of official media attention to Olympic achievements.

[7]We employ the 2005 census because it is the only wave containing detailed wage information.

Other Complementary Datasets. We incorporate additional sources to strengthen our analysis. From China City Statistical Yearbooks, we extract prefecture-level socioeconomic indicators including per capita GDP and population. We collect county-level gazetteer books to identify Olympic-related events recorded in local historical records and utilize Baidu Search Index data to measure regional variation in public attention to Olympic competitions. To construct our instrumental variable, we compile medal records from China's 1983 National Games using official sports history archives and Soviet/Russia athlete participation data from International Olympic Committee registration records (1952-2004).

Sample Construction. We apply several restrictions to construct our analytical sample. We limit the sample to individuals born between 1960 and 1995, ensuring sufficient exposure to China's Olympic participation since 1984 for older cohorts while guaranteeing that younger cohorts completed their educational decisions by the 2015 census.[8] To ensure comparability across regions in our analysis, we focus on prefectures that produced at least one female Olympic medalist between 1984 and 2004, which yields a main sample of 264,190 individuals from 91 prefectures.

3.2. Variable Construction

Treatment Variables Our treatment construction precisely captures exposure to hometown Olympic success during developmentally sensitive periods. The primary treatment variable, *Medal Cohort*, is a binary indicator equal to one if an individual was aged 18 or younger when at least one female athlete from their prefecture won an Olympic medal (gold, silver, or bronze). We choose the age threshold of 18 because it represents the end of the "choice window" when educational decisions and career aspirations are most malleable.

This treatment variable enables us to compare individuals who experienced exposure to local female Olympic success during the educational choice window with those who did not. Our identification strategy leverages two sources of variation. First, across prefectures, we compare individuals from prefectures that produced female Olympic medalists to those from prefectures that did not. Second, within the same prefecture, we compare individuals who were aged 18 or younger when the medal was won to those who were older at the time of exposure. The latter group serves as a natural control since they experienced the same local Olympic achievement but after the developmental period when exposure is hypothesized to have the strongest impact on educational and career decisions.

Educational Attainment Measures We construct several complementary metrics from the

[8] In robustness checks, we expand these sample restrictions and obtain consistent results.

population census data to measure educational achievement. First, we create a continuous measure of years of schooling by converting reported educational attainment into numerical values: 0 years for illiteracy, 6 years for primary school, 9 years for junior high school, 12 years for high school, and 16 years for four-year university. Second, we examine educational outcomes along two margins: transitions and dropouts. Transitions capture whether students advance from one educational level to the next, conditional on completing the previous stage. We construct binary indicators for: primary school enrollment or above, junior high enrollment (among primary completers), senior high enrollment (among junior high completers), and college enrollment (among high school completers). Dropouts measure exits before stage completion, conditional on enrollment. For each tier, dropout equals one if an individual enrolled but did not complete that stage, and zero otherwise.

Gender Attitudes. To explore potential mechanisms underlying Olympic effects, we construct measures of gender attitudes and household behavior using several representative household surveys. These measures allow us to examine whether exposure to female Olympic success shifts individual attitudes toward gender equality and influences household decision-making. We draw on CGSS survey questions that capture respondents' views on gender roles in society, the appropriate division of domestic responsibilities between spouses, and the relative importance of educational investment for male and female children. Additionally, we examine household expenditure patterns on education by child gender using CHIP data to assess whether exposure translates into differential investment behaviors.

Control Variables. Our incorporate controls for individual characteristics such as ethnicity (Han or minority), household registration type (urban or rural hukou), and current migration status. The inclusion of hukou status is particularly important given substantial educational disparities between urban and rural residents in China. We also incorporate prefecture-level controls to account for regional variation in economic development. From China City Statistical Yearbooks, we extract socioeconomic indicators including per capita GDP and population to control for local economic conditions that may independently influence both Olympic performance and educational outcomes.

3.3. Summary statistics

Appendix Table A1 presents summary statistics for our main sample of 264,190 individuals born between 1960 and 1995, drawn from China's 2015 1% Population Mini-Census. The sample is gender-balanced (49.5% female), with 11.3% being cross-prefecture migrants who moved away from their birth prefecture by 2015. Educational attainment averages 10.6 years of schooling, corresponding to completion between junior and senior high school levels. Nearly all individuals (98.9%) transitioned to primary school,

with 89.3% of those completing primary school continuing to junior high school, 42.5% of junior high school completers advancing to high school, and 31.4% of high school graduates proceeding to college.

Appendix Figure A3 illustrates China's Olympic medal performance and female representation between 1984 and 2004. Total medals rose from 32 at the 1984 Los Angeles Olympics to 63 at the 2004 Athens Olympics, with particularly rapid growth after 1992 coinciding with the Soviet Union's dissolution. Notably, female athletes contributed a disproportionate share of China's Olympic success, with the female medal share rising to approximately 70% after 1992 and maintaining this high level across subsequent Olympic cycles.

Appendix Table A2 presents the top 10 Olympic sports ranked by the number of medals won by Chinese athletes between 1984 and 2004, along with the female share of medalists in each sport. Diving leads with the highest medal count, followed by gymnastics, shooting, and weightlifting, reflecting China's particular strengths in these disciplines. Examining female representation across these sports reveals substantial heterogeneity: women achieved complete dominance in certain disciplines–accounting for 100% of China's medals in swimming and judo, and over 80% in badminton and athletics–while representing considerably smaller proportions in others, such as weightlifting (24%) and gymnastics (30%).

Figure A4 illustrates the geographic and temporal distribution of China's first female Olympic medalists across prefecture-level administrative units between 1984 and 2004. The map reveals substantial spatial heterogeneity in the timing of female Olympic success, with the darkest shaded regions representing prefectures that produced their first female medalist in 1984 and progressively lighter shades indicating later years of first achievement. This staggered emergence of first female medalists across prefectures provides the key identifying variation for our empirical analysis, generating both cross-sectional and temporal variation in treatment assignment that enables causal identification.

4. Empirical Strategy

4.1. Two-Way Fixed Effect Model

We examine whether female Olympic medalists influence gender disparities in educational outcomes by studying their effect on gender education gaps within their hometowns. While the Olympics are a national event, our assumption is that medalists exert stronger influence locally, as they receive disproportionate media attention and public recognition in their home regions, making them particularly salient in shaping community attitudes and behaviors (see Section 2.2).

Our benchmark analysis focuses on 91 prefectures that produced at least one female Olympic medalist between 1984 and 2004. Limiting the sample in this way ensures greater homogeneity and avoids bias from regions that never produced a medalist. Robustness checks including those regions yield similar results.

The empirical strategy relies on two sources of variation. First, we exploit differences in the timing of each prefecture's first female Olympic medal. Second, we compare individuals from the same prefecture but in different birth cohorts at the time of the medalist's success.

Because educational attainment is typically shaped within a specific age window, we compare individuals who were aged 18 or younger when their prefecture first achieved female Olympic success with those who were older at that time. The idea is that younger individuals–whose schooling decisions were still in progress–were more likely to be influenced by the medalist's achievement, whereas older cohorts, having largely completed their education, would be unaffected.

The key idea underlying our approach is illustrated in Figure 1. We define *Medal Cohorts* as individuals who were aged 18 or younger when their prefecture first produced a female Olympic medalist, and *Non-medal Cohorts* as those who were older than 18 at that time. This age cutoff reflects the period when schooling decisions are typically still being made.

Consider two prefectures with different timing. Prefecture A first celebrated a female Olympic medalist in 1984. Individuals born between 1966 and 1995 were aged 18 or younger in 1984 and are classified as Medal Cohorts, while those born before 1966 are classified as Non-medal Cohorts. Prefecture B reached this milestone eight years later, in 1992. In this case, Medal Cohorts include those born between 1974 and 1995, and Non-medal Cohorts are those born before 1974.

This timing variation enables a two-way fixed effects strategy, comparing the gender education gap between Medal and Non-medal Cohorts in prefectures that achieved female Olympic success earlier versus later. Prefecture fixed effects control for time-invariant characteristics within each region, while cohort fixed effects control for factors common to the same birth years across all regions. By accounting for these potential confounders, we isolate the effect of a prefecture's first female Olympic success on the educational outcomes of younger cohorts who were still making schooling choices.

Our baseline specification directly follows the cohort definitions described in the Prefecture A/B example. We estimate:

$$Y_{icp} = \beta_0 + \beta\,\text{Female}_i \times \text{Medal Cohort}_{cp} + \delta_{cp} + \gamma_{\text{Female}\times\text{Post-Mao}} + X_i'\theta + \varepsilon_{icp}, \quad (1)$$

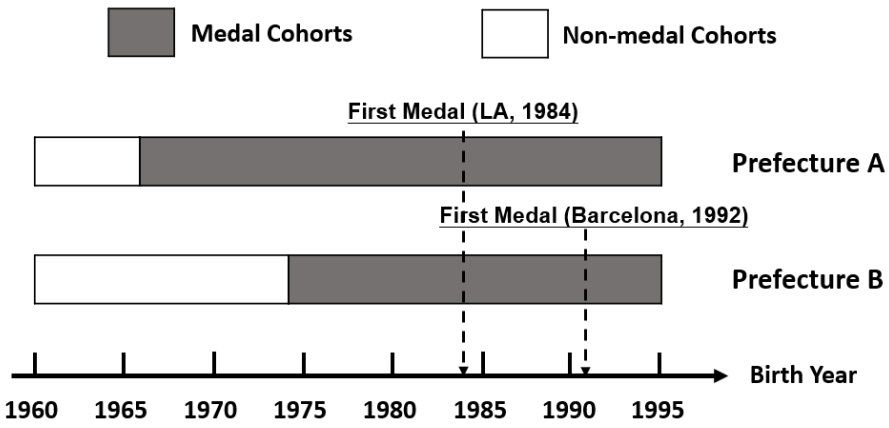


Figure 1. *Example of Empirical Strategy: Staggered Timing of First Female Olympic Medalists Across Prefectures. This figure illustrates our empirical strategy, which exploits two sources of variation to estimate the effects of a prefecture's first female Olympic success on gender-related educational outcomes. First, we use cross-prefecture variation in the timing of when different regions first produced female Olympic medalists (e.g., Prefecture A in the 1984 Los Angeles Olympics vs. Prefecture B in the 1992 Barcelona Olympics). Second, within each prefecture, we compare individuals from different birth cohorts who were at different stages of their educational decisions when the first female Olympic success occurred in their hometown.*

where Y_{icp} denotes the educational outcome for individual i born in calendar year c from prefecture p. The indicator Medal Cohort$_{cp}$ equals one if an individual from prefecture p and birth year c was aged 18 or younger when their prefecture first produced a female Olympic medalist, and zero otherwise. For example, in Prefecture A, individuals born between 1966 and 1995 are coded as Medal Cohorts, while in Prefecture B the corresponding range is 1974 to 1995.

We include prefecture-by-birth year fixed effects (δ_{cp}) to absorb all prefecture-specific characteristics and birth year factors shared by men and women alike. An interaction between the female indicator and a post-Mao cohort indicator ($\gamma_{\text{Female}\times\text{Post-Mao}}$) captures the influence of nationwide education reforms on gender differences, ensuring that our estimates are not confounded by this major institutional change. In addition, we include individual-level characteristics–ethnicity, hukou registration type, and migration status–to account for potential compositional differences across cohorts and prefectures. Standard errors are clustered at the prefecture level.

The coefficient β captures the difference in educational outcomes between women and men within the same prefecture and birth cohort, comparing Medal Cohorts to Non-medal Cohorts. This corresponds to contrasting the gender gap for Medal Cohorts with that for Non-medal Cohorts, and doing so across prefectures that achieved their first female Olympic medal at different times. This specification implements the two-way fixed effects approach described above, leveraging the staggered timing of a prefecture's first female Olympic medal to estimate its impacts on gender differences of schooling

decisions.

4.2. Instrumental Variable Strategy

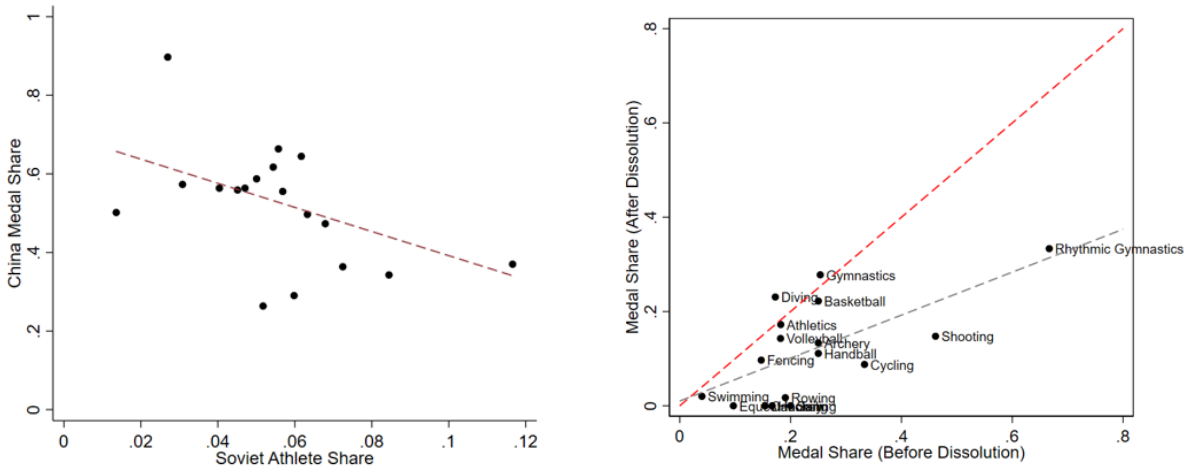
While our two-way fixed effects specification accounts for time-invariant prefecture characteristics and birth cohort specific factors, it can still be the case that the timing of the first medalist may not be entirely exogenous.

On the one hand, omitted variables–such as unobserved time-varying factors at regional level–might influence both the emergence of female Olympic medalists and local gender attitudes. For example, prefectures experiencing rapid economic growth or increasing cultural openness might simultaneously produce more female medalists and experience larger reductions in gender gaps. On the other hand, reverse causality may arise if regions with improving gender equality actively promote female participation in competitive sports, thereby increasing the likelihood of athletic success and confounding our interpretation.

To address these concerns, we implement an instrumental variables strategy that exploits plausibly exogenous variation from global geopolitical shocks that affected medal opportunities, thereby influencing the timing of the first female medalist across prefectures. Our instrument leverages the Soviet Union's historic Olympic dominance and the exogenous geopolitical events that weakened this dominance. As a leading competitor across numerous disciplines, Soviet participation–or absence–substantially reshaped medal opportunities for other countries. In China's case, geopolitical shocks such as the 1984 Soviet boycott of the Los Angeles Games and the Soviet Union's dissolution in 1991 altered medal prospects across sports in ways unrelated to local socioeconomic conditions or prevailing gender norms in Chinese prefectures. We exploit this externally induced variation in competitive opportunities as the basis for our identification strategy.

Our identification builds on a Bartik-style instrument that combines pre-determined athletic specializations of Chinese prefectures (the "shares") with exogenous changes in international competitiveness across sports disciplines driven by the Soviet Union's decline (the "shifts"). The intuition is straightforward: the collapse of the Soviet Union reshaped medal opportunities across sports in heterogeneous ways, and the extent to which each prefecture benefited depended on its historical sports composition.

The Soviet Union was historically among the most dominant competitors in the Olympic Games. However, its boycott of the 1984 Los Angeles Olympics and its dissolution after 1990 weakened this dominance and created a vacuum in the international competitive landscape. This vacuum shifted medal opportunities toward other countries, including China. Figure 2(a) provides evidence for this mechanism by examining the relationship



(a) Soviet Share and China's Success

(b) Soviet Dominance Before vs After 1991

Figure 2. *Soviet Collapse and Chinese Olympic Opportunities. This Figure demonstrates the empirical basis for our instrumental variable strategy. Panel (a) shows a binscatter plot of China's medal-winning probability versus Soviet athlete participation rates (excluding China) across women's events from 1984-2004, controlling for sport fixed effects. The negative correlation confirms that Soviet dominance systematically reduced Chinese medal opportunities. Panel (b) compares Soviet medal shares in women's events before (1952-1988) and after (1996-2004) dissolution. The red dashed line marks the 45-degree line, while the gray dashed line shows the fitted relationship, revealing heterogeneous declines in Soviet performance across sports following political collapse.*

between Soviet athlete participation and China's medal-winning probability across women's events. The binscatter plot reveals a strong negative correlation and demonstrates that events with higher Soviet participation rates were systematically associated with lower medal acquisition for Chinese athletes.

Crucially, the decline of Soviet competitiveness was uneven across disciplines. Sports in which the Soviet Union had historically invested heavily and consistently dominated experienced sharper declines in competition, whereas sports with limited Soviet presence were much less affected. Figure 2(b) illustrates this pattern by comparing Soviet medal shares in women's events before (1952-1988, on the x-axis) and after dissolution (1996-2004, on the y-axis). The gray fitted line, with its slope significantly below unity, demonstrates that sports with initially higher Soviet dominance experienced disproportionately larger competitive declines following the collapse of Soviet Union. These cross-sport differences constitute the "shifts" in our Bartik construction.

The "shares" capture each prefecture's pre-determined athletic specialization, measured by performance in China's 1983 National Games–held before China's Olympic return and subsequent geopolitical shocks. These patterns reflect historical investments in facilities, coaching, and training systems, as well as established local talent pipelines.

The "shifts" are measured by the proportion of Soviet female athletes (excluding China) in each sport. Because Olympic participation requires meeting strict qualifying

standards–such as world rankings or minimum scores–this proportion provides a credible proxy for Soviet competitive strength. Following the Soviet Union's dissolution, prefectures specialized in formerly Soviet-dominated sports suddenly faced greater medal opportunities, while those oriented toward unaffected sports saw little change. Interacting these predetermined shares with exogenous shifts generates plausibly exogenous variation in medal opportunities across prefectures.

Constructing IV. We build the Bartik-style instrument in five steps. First, to measure each prefecture's pre-determined athletic specialization, we collect information on female medalists from China's 1983 National Games–held before China's 1984 Olympic return. We record each medalist's sport discipline and hometown prefecture, then aggregate these data to construct hometown prefecture-sport specialization shares.

Specifically, for prefecture p in women's sport k, we define the specialization share:

$$\rho_{kp} = \frac{\text{Medals won by prefecture } p \text{ in women's sport } k \text{ at 1983 National Games}}{\text{Total medals in women's sport } k \text{ at 1983 National Games}}, \quad (2)$$

where higher values indicate stronger comparative advantage in sport k.

For example, if women's shooting produced 10 medals, with 5 medals won by athletes from Prefecture A, 3 from Prefecture B, and 2 from Prefecture C, then Prefecture A's strength in women's shooting would be 50%, Prefecture B's would be 30%, Prefecture C's would be 20%, and all other prefectures would have zero shares.

Second, we compute the *shift* variable, s_{kt}, capturing Soviet competitive strength in sport k during Olympic year t (excluding Chinese athletes):

$$s_{kt} = \frac{\text{Soviet female athletes in sport } k \text{ at Olympics } t}{\text{Total female athletes in sport } k \text{ at Olympics } t \text{ (excluding China)}}. \quad (3)$$

Larger values indicate stronger Soviet presence and correspondingly fewer medal opportunities for others.

Third, we interact each prefecture's pre-determined specialization with these exogenous shocks:

$$\theta_{pt} = \sum_{k=1}^{K} \rho_{kp} \times s_{kt}. \quad (4)$$

This Bartik aggregation captures prefecture p's exposure to Soviet competition in year t. Lower values of θ_{pt} correspond to greater medal opportunities as Soviet dominance waned.

Fourth, we map θ_{pt} into a probability measure bounded between 0 and 1:

$$\pi_{pt} = 1 - e^{-(1-\theta_{pt})}. \quad (5)$$

This exponential mapping is motivated by interpreting medal opportunities as rare events in a Poisson process, where the rate parameter $(1 - \theta_{pt})$ reflects the intensity of competitive opportunities available to Chinese athletes from prefecture p in Olympic year t, net of Soviet competitiveness. Higher values of θ_{pt} (stronger Soviet presence) correspond to lower values of π_{pt}, reflecting that greater Soviet dominance reduces medal opportunities available to Chinese athletes from that prefecture.

Finally, we aggregate these opportunities into a cohort-level measure. For individuals born in prefecture p with birth year c, we define the *Predicted Medal Cohort* as cumulative exposure during ages 0-18:

$$\text{Predicted Medal Cohort}_{cp} = 1 - \prod_{j=1}^{J_c} (1 - \pi_{pt_j}), \tag{6}$$

where $t_j \in \{1984, 1988, 1992, 1996, 2000, 2004\}$ indexes Olympic years covered before age 18, and J_c is the number of such years. Intuitively, this represents the probability that an individual cohort experienced at least one medal opportunity from its home prefecture during window of choice age.

For example, a cohort born in 1979 would be exposed to the 1984, 1988, 1992, and 1996 Olympics before age 18. If the prefecture's predicted medal probabilities in these years were 0.1, 0.1, 0.2, and 0.2, respectively, then their predicted medal exposure would be $1 - (1 - 0.1)(1 - 0.1)(1 - 0.2)(1 - 0.2) = 0.4816$.

2SLS Regression. Using the predicted medal exposure, we employ a two-stage least squares estimation proceeds as follows. In the first stage, we regress the observed medal cohort exposure on the predicted exposure generated by our Bartik instrument:

$$\begin{aligned} \text{Female}_i \times \text{Medal Cohort}_{cp} = \alpha_0 + \alpha_1 \, \text{Female}_i \times \text{Predicted Medal Cohort}_{pc} \\ + \delta_{cp} + \gamma_{\text{Female} \times \text{Post-Mao}} + X_i' \phi + \nu_{icp}, \end{aligned} \tag{7}$$

where Predicted Medal Cohort$_{pc}$ is constructed following Equation (6) using pre-determined prefecture athletic specialization interacted with time-varying Soviet participation rates. The coefficient α_1 captures the strength of the instrument, with larger values indicating that exogenous shifts in medal opportunities strongly predict actual medalist emergence.

In the second stage, we estimate the causal effect of female medalist exposure on educational outcomes using the predicted values from the first stage:

$$Y_{icp} = \beta_0 + \beta \, \text{Female}_i \times \widehat{\text{Medal}} \, \text{Cohort}_{cp} + \delta_{cp} + \gamma_{\text{Female} \times \text{Post-Mao}} + X_i' \theta + \varepsilon_{icp}, \tag{8}$$

where $\text{Female}_i \times \widehat{\text{Medal}} \, \text{Cohort}_{cp}$ denotes the fitted values from Equation (7). The coef-

ficient β represents the local average treatment effect of exposure to female Olympic medalists on gender gaps in educational attainment, identified through exogenous variation in medal opportunities created by geopolitical shocks to international competition.

Exclusion Restriction. Following Borusyak, Hull, and Jaravel (2022), our Bartik IV relies on the exogeneity of the *shifts*–sports-level changes in Soviet female participation–rather than the *shares*–prefecture-level specialization patterns. The exclusion restriction requires that Soviet participation influence gender outcomes in Chinese prefectures only through its effect on medal opportunities, with no independent impact through channels such as local gender attitudes.

This assumption is plausible because Soviet participation was determined by domestic sports planning and broader geopolitical factors unrelated to gender stereotypes evolution in China. In particular, the sudden dissolution of the Soviet Union was unexpected and orthogonal to gender dynamics across Chinese prefectures.

In Appendix C, we conduct several tests to support this identifying assumption. First, we show that the decline in Soviet strength was not systematically concentrated in sports where China posed competitive threats, and that our instrument does not predict pre-determined prefecture characteristics correlated with education.

Second, we address the concern that regional characteristics might interact with time trends to generate spurious correlations, even if baseline levels are balanced. Following Borusyak, Hull, and Jaravel (2022), we interact pre-1991 prefecture characteristics with birth cohort fixed effects and find our results remain stable.

Third, we implement a pre-trend test to verify that medal opportunities are not spuriously capturing unobserved forces driving educational trends. Using only pre-dissolution cohorts, we regress outcomes on treatment predictions constructed for post-dissolution years. The null results suggest our instrument isolates the effects of Soviet collapse rather than pre-existing differences.

Fourth, as emphasized by Borusyak, Hull, and Jaravel (2025), shift-share instruments may be biased if based on too few shifts, even if those shifts are random. To meet the "many shifts" condition, we reconstruct the instrument at the finer level of Olympic events rather than broad sport categories.

Finally, we demonstrate robustness to alternative definitions of shifts by expanding the measure of post-Soviet competitiveness beyond Russia to include other successor states such as Ukraine and Belarus.

Placebo Test. To further mitigate the concern that our results may simply reflect general athletic success, regional development trends, or other confounders driving educational

outcomes, we implement a placebo test. We construct an IV for male medal cohorts using the same approach. If the estimated effects operate through the specific influence of female success, exposure to male medalists should yield no comparable impact.

5. Empirical Results

5.1. Fixed Effects Estimation

Table 1 presents our baseline estimates of the effect of exposure to female Olympic success during educational choice window when individuals are still making schooling decisions, measured as years of schooling. The key coefficient of interest is the interaction term Female $\times$ Medal Cohort, which captures the differential impact of female medalist exposure on female educational outcomes relative to male.

The results reveal a consistent and statistically significant positive effect across all specifications. The key estimated coefficient ranges from 0.320 to 0.326, indicating that females exposed to female Olympic medalists from their home prefecture during the educational choice window complete approximately 0.32 additional years of schooling compared to their male peers. This represents roughly a 3% increase relative to the sample mean of 10.62 years of schooling and roughly one-third of the baseline gender gap of 0.97 years (calculated as the average difference in years of schooling between males and females among pre-Olympic cohorts), suggesting an economically meaningful impact of female medalist exposure on educational attainment.

These findings are robust across different model specifications. Column (1) includes basic two-way fixed effects and Post-Mao era, while columns (2) and (3) add increasingly stringent controls, including the interactions between home prefecture and birth year, as well as a comprehensive set of individual characteristics.

We also show that our findings are robust to alternative treatment definitions, sample compositions, and model specifications. Appendix Table A3 tests whether results are sensitive to the age cutoff for defining *Medal Cohort* by using thresholds of 6, 12, or 15 years instead of 18. We also replace the binary treatment indicator with a continuous measure capturing the number of years each individual was exposed to female Olympic medalists before age 18. All alternative measures yield consistent results.

Appendix Table A4 addresses several additional concerns. First, the 1984 Los Angeles Olympics was exceptional due to the Soviet-led boycott, which fundamentally altered competitive conditions compared to subsequent Games. We exclude prefectures that produced their first female medalist in 1984 to ensure our results are not driven by this unique event. Second, we expand the sample to include all Chinese prefectures and birth cohorts to address potential sample selection problems. Third, we exclude

Table 1. *Effect of Female Olympic Medal on Gender Disparities in Years of Schooling*

	Dependent Variable: Years of Schooling			
	Prefectures with Female Medalist			Also Male Medalist
	(1)	(2)	(3)	(4)
Female × Medal Cohort	0.325***	0.322***	0.326***	0.320***
	(0.0523)	(0.0521)	(0.0522)	(0.112)
Medal Cohort	-0.209***			
	(0.0706)			
Female × Male Medal Cohort				0.0360
				(0.104)
Controls			Y	Y
HomePref FE	Y			
BirthYear FE	Y			
HomePref×BirthYear		Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y
Mean	10.62	10.62	10.62	11.50
N	264,190	264,190	264,190	113,441
R^2	0.248	0.268	0.271	0.256

Notes: This table presents the baseline estimates of the effect of exposure to hometown female Olympic medalists on gender disparities in years of schooling. Column (1) includes prefecture fixed effects, birth year fixed effects, and the Female × Post-Mao interaction term. Column (2) adds individual-level controls including an indicator for Han ethnicity, an indicator for urban hukou status, and an indicator for migration status. Column (3) is our preferred specification, which replaces the separate prefecture and birth year fixed effects with prefecture-by-birth year fixed effects while retaining all individual-level controls from column (2). Column (4) restricts the sample to prefectures that produced both female medalist and male medalist, and includes an additional interaction term Female × Male Medal Cohort to directly compare the gender-specific effects of female versus male medalist exposure. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

individuals whose residence differs from their birthplace to ensure accurate measurement of Olympic medalist exposure. Fourth, we control for compulsory education policy reforms to account for concurrent educational expansions that may confound our estimates. Fifth, we include gender-by-prefecture fixed effects to absorb region-specific gender differences. Finally, to address concerns about time-varying factors that differentially affect male and female education, we interact the female indicator with regional GDP per capita and the number of primary schools. When prefecture-year data are missing, we impute using the corresponding provincial average for that year. Across all specifications, the estimated effects remain statistically significant and similar in magnitude.

To examine whether these effects are specifically driven by female athletic achievement or reflect general Olympic success regardless of athlete gender, column (4) of Table 1 restricts the sample to prefectures that produced both female and male medalists, enabling a direct comparison of gender-specific effects. The Female × Medal Cohort

effect remains robust, while the Female $\times$ Male Medal Cohort coefficient is substantially smaller and statistically insignificant. This contrast demonstrates that Olympic medalist effects are primarily driven by female medalists, as exposure to male Olympic success does not meaningfully influence women's educational decisions.

5.2. More Transitions or Less Dropouts?

We show that exposure to female Olympic medalists increases women's educational attainment relative to men. A natural question arises: does this gain come from more girls advancing to higher educational tiers, or from fewer girls dropping out once enrolled? To distinguish between these possibilities, we decompose educational outcomes into transitions–advancing to the next stage conditional on completing the previous one, and dropouts–exiting before completion conditional on enrollment. To investigate this question, we examine each channel separately.

We first focus on transitions. For each educational stage, we restrict the sample to individuals who completed the previous stage and examine their probability of enrolling in the subsequent tier. The dependent variable is binary, taking the value of one if the individual progressed to the next educational level and zero otherwise. Specifically, we estimate Equation (1) using four group of samples: (1) the full sample, where the outcome indicates enrollment in primary school or higher; (2) primary school graduates, where the outcome indicates enrollment in junior high school or higher; (3) junior high school graduates, where the outcome indicates enrollment in senior high school or higher; and (4) senior high school graduates, where the outcome indicates enrollment in college or higher.

Table 2 presents the results. Female medalist exposure increases girls' primary school enrollment (relative to boys) by 1.03 percentage points (column (1)), representing a 1% increase relative to the mean. The effect is substantially larger at junior high: conditional on primary completion, exposure increases girls' enrollment relative to boys by 4.53 percentage points (column (2))—a 5.1% increase relative to the mean. At the high school transition, the effect remains substantial and significant at 1.91 percentage points (column (3)), a 4.5% increase relative to the mean. At college entry, the coefficient remains positive but is not statistically significant (column (4)).

We next examine dropouts. For each educational stage, we restrict the sample to students who enrolled and estimate whether they completed that stage. The dependent variable is a binary indicator equal to one if the individual dropped out before completion, and zero if they completed the stage. Table 3 presents the results. Conditional on enrollment, we find no significant impact on dropout rates across all educational stages.

Table 2. *Effect of Female Olympic Medal on Gender Disparities in Educational Transitions*

	Dependent Variable: Educational Transitions			
	Illiteracy→Primary+	Primary→Junior+	Junior→High+	High→College+
	(1)	(2)	(3)	(4)
Female × Medal Cohort	0.0103***	0.0453***	0.0191***	0.00651
	(0.00225)	(0.00653)	(0.00662)	(0.00820)
Controls	Y	Y	Y	Y
HomePref×BirthYear	Y	Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y
Mean	0.989	0.893	0.425	0.314
N	264,190	256,000	228,692	97,207
R^2	0.059	0.139	0.140	0.159

Notes: This table examines the effect of exposure to hometown female Olympic medalists on gender disparities in educational transitions at different stages. Column (1) uses the full sample and examines whether individuals enrolled in primary school or above. Column (2) restricts to individuals who completed primary school and examines enrollment in junior high school or above. Column (3) restricts to individuals who completed junior high school and examines enrollment in senior high school or above. Column (4) restricts to individuals who completed senior high school and examines enrollment in college or above. Each column represents the conditional probability of advancing to (entering) the next educational level. All specifications include prefecture-by-birth year fixed effects and the Female × Post-Mao interaction term. Control variables include ethnicity, hukou type, and migration status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

Taken together, these findings indicate that the observed gains in female educational attainment stem from greater advancement to higher schooling levels rather than from reduced dropout among enrolled students. The effects are concentrated at the junior and senior high transitions—stages where competitive tracking intensifies within China's education system. This pattern is consistent with evidence that gender differences in competitiveness become especially consequential at pivotal choice points (Buser, Niederle, and Oosterbeek 2014). The variation in effects across transitions also points to the role of parental decision-making, a mechanism discussed further in Section 6.2.

5.3. IV Estimation

While our fixed effects model accounts for unobserved heterogeneity at the prefecture and birth-year levels, time-varying confounders may still bias the estimates. To address this, we exploit exogenous variation in medal opportunities generated by geopolitical shocks that reshaped international competition. Specifically, we construct a Bartik-style instrument that interacts pre-determined athletic specialization from China's 1983 National Games–set before full Olympic reintegration–with time-varying Soviet female athlete participation across Olympic sports. This interaction yields predicted medal probabilities for each prefecture and Olympic year, which we transform into cohort-level exposure measures.

Table 3. *Effect of Female Olympic Medal on Gender Disparities in Educational Dropout*

	Dependent Variable: Dropout (1=Yes)			
	Primary Dropout	Junior Dropout	High Dropout	College Dropout
	(1)	(2)	(3)	(4)
Female × Medal Cohort	-0.00543	0.00131	-0.00370	0.00144
	(0.00842)	(0.00152)	(0.00269)	(0.00449)
Controls	Y	Y	Y	Y
HomePref×BirthYear	Y	Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y
Mean	0.087	0.028	0.018	0.009
N	26,912	131,473	66,707	30,060
R^2	0.111	0.035	0.061	0.083

Notes: This table examines the effect of exposure to hometown female Olympic medalists on gender disparities in educational dropout at different stages. The dependent variable is a binary indicator equal to one if an individual entered but did not complete a specific educational stage (i.e., dropped out). Column (1) examines dropout among those who entered primary school. Column (2) examines dropout among those who entered junior high school. Column (3) examines dropout among those who entered senior high school. Column (4) examines dropout among those who entered college. Each column conditions on entry into the respective educational level and measures whether the individual failed to complete it. All specifications include prefecture-by-birth year fixed effects and the Female × Post-Mao interaction term. Control variables include ethnicity, hukou type, and migration status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

Table 4 reports the IV estimates. We first assess instrument strength by regressing observed medal exposure on the predicted measure. The first-stage results (column (1)) show a coefficient of 0.67 with an F-statistic of 134, comfortably above weak instrument thresholds. The second-stage estimates (column (2)) indicate that medal exposure significantly narrows educational gender gaps: the coefficient of 0.707 is both statistically significant and economically meaningful.

Furthermore, as discussed in Section 5.3, we conduct a placebo test by constructing male medal cohorts and an IV for male medal cohorts using the same methodology. Columns (3) and (4) of Table 4 presents the results. The first-stage relationship for male medals (column (3)) remains strong. This result is both theoretically expected and empirically reassuring: the same geopolitical shocks and athletic specialization patterns that created opportunities for female athletes should similarly affect male athletes.

However, the second-stage results reveal a crucial asymmetry (column (4)). Male medal cohort exposure shows no significant effect on educational gender gaps. This pattern aligns with our baseline results in column (4) of Table 1, suggesting that female medallists have effects on gender inequality, rather than general athletic success.

The null result for male medalists also helps mitigate identification concerns about

Table 4. *Bartik IV Regression: Female vs Male Medal Effects*

Dependent Variable	Female Medal		Male Medal	
	1^{st} Stage	2^{nd} Stage	1^{st} Stage	2^{nd} Stage
	Female×Medal Cohort	Years of Schooling	Female×Medal Cohort	Years of Schooling
	(1)	(2)	(3)	(4)
Female × Medal Cohort		0.707***		
		(0.101)		
Female × Predicted Medal Cohort	0.670***			
	(0.0578)			
Female × Male Medal Cohort				0.684
				(0.417)
Female × Predicted Male Medal Cohort			0.424***	
			(0.133)	
Controls	Y	Y	Y	Y
HomePref×BirthYear	Y	Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y
F-statistics		134.172		10.105
N	264,190	264,190	113,441	113,441
R^2	0.894	0.004	0.881	0.001

Notes: This table presents instrumental variable estimates using a Bartik-style instrument that interacts prefecture-level pre-determined athletic specialization with time-varying Soviet female athlete participation rates across Olympic sports. Columns (1)-(2) examine female medalist effects: column (1) shows the first-stage relationship between the instrument (Female × Predicted Medal Cohort) and actual medal exposure (Female × Medal Cohort), while column (2) presents the second-stage effect on years of schooling. Columns (3)-(4) present analogous specifications for male medalist exposure as a placebo test. The F-statistics reported are Kleibergen-Paap Wald F-statistics. All specifications include prefecture-by-birth year fixed effects and the Female × Post-Mao interaction term. Control variables include ethnicity, hukou type, and migration status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

prefecture-specific trends that might correlate with both Olympic success and reduction in gender disparity in education. If unobserved confounding factors were driving our results, we would expect significant effects for both genders. Instead, the contrasting pattern suggests that only female Olympic success catalyzes changing gender outcomes.

5.4. Robustness

Our identification relies on exogenous variation in women's sports created by the Soviet dissolution. The exclusion restriction requires that Soviet female participation affect local gender outcomes only through medal opportunities. In this section, we present several tests to assess the validity of this assumption.

Validating Shift Exogeneity. The key identification concern is that the Soviet retreat from women's sports may have been systematically aligned with China's emerging strengths rather than distributed quasi-randomly across disciplines. If Soviet athletes dispro-

portionately reduced participation in sports where Chinese competitors were gaining ground, our estimated shifts would be endogenous to China's athletic specialization.

To assess this, we examine whether Soviet decline correlates with China's participation in the two Olympic Games held immediately before the dissolution. Specifically, we construct changes in the Soviet share of female athletes between 1988 and 1996 across sports and regress these on China's athlete shares in 1984 and 1988, respectively. Appendix Figure A5(a) presents results using the 1984 Los Angeles Games, while Appendix Figure A5(b) uses the 1988 Seoul Games.

Across both specifications, we find near-zero correlations, indicating that the Soviet withdrawal was not systematically concentrated in sports where China was more competitive. This supports the assumption that our shifts capture plausibly exogenous variation in competitive opportunities.

Balance Test. Even if shifts are exogenous at the sport level, the instrument could still violate the exclusion restriction if it systematically predicts pre-determined regional characteristics that shape gender stereotypes or educational outcomes. To test this, Appendix Table A8 reports comprehensive prefecture-level balance checks. We assess whether predicted medal opportunities for the 1992 cohort correlate with key pre-dissolution characteristics: the 1990 sex ratio (female share of population), GDP per capita, primary and secondary industry shares, and the density of primary schools, gymnasiums, and hospitals per 1,000 residents.

Across all dimensions, we find no significant correlations. This indicates that our instrument captures variation orthogonal to regional characteristics that might otherwise explain changes in educational outcomes.

Controlling for Dynamics of Regional Characteristics. A further concern is that regional characteristics influencing education may evolve over time in ways that spuriously correlate with medal opportunities, even if baseline levels are balanced. To address this, Appendix Table A9 reports results controlling for interactions between pre-1991 prefecture characteristics and birth cohort fixed effects. The stability of our main coefficients under these specifications suggests that time-varying regional heterogeneity does not drive our findings.

Pre-trend Test. A key concern is that regional characteristics shaping medal opportunities may also correlate with unobserved long-term factors that jointly influence educational outcomes, creating spurious effects. If this were the case, our predicted medal opportunities for the 1990s cohorts should also correlate with outcomes of earlier cohorts that were unaffected by the Soviet decline in women's sports.

To test this, Appendix Table A10 reports a placebo analysis using cohorts born in the

1960s-1980s. For each individual in these earlier cohorts (e.g., 1965), we assign the predicted medal opportunities calculated for the corresponding prefecture and year of a later 1990s cohort (e.g., 1995). The absence of significant effects in these regressions, together with weak first-stage relationships, suggests that our instrument captures the impact of the Soviet decline in international competitiveness rather than reflecting pre-existing educational trends.

Satisfying the "Many Shifts" Requirement. As Borusyak, Hull, and Jaravel (2025) emphasize, the exogenous shifts approach requires sufficient shifts to ensure the law of large numbers applies: if the shift number is too small, the shifts may by chance be correlated with unobservables even if they are truly random. Appendix Table A11 addresses this requirement by reconstructing our instrument using 214 detailed Olympic events rather than 29 comprehensive sport categories, substantially increasing the effective number of shifts. The consistency of our results under this finer categorization shows that our identification is less likely to suffer from the few-shifts problem.

Using Alternative Shifts. In the benchmark analysis, we use Russian participation as the proxy for post-Soviet competitive strength. As an alternative, we construct a proxy based on the combined participation of Russia, Ukraine, and Belarus–the only other former republics with substantial Olympic presence and medal success during our study period. Appendix Table A12 shows that coefficients remain highly similar across these specifications, indicating that our results are not sensitive to the precise definition of the shift variable.

The robustness is explained by the strong correlation in female athlete participation shares across sports when comparing Russia alone with the Russia–Ukraine–Belarus aggregate. Appendix Figure A6 documents this close alignment, which ensures that either measure provides a comparable proxy for post-Soviet competitive strength and produces nearly identical empirical results.

6. Mechanism Analysis

Having shown that exposure to female Olympic medalists reduces educational gender gaps, we now turn to the underlying mechanisms. We posit that female Olympic success challenges stereotypes about women's competitiveness through two complementary channels. First, media coverage amplifies the achievements of female athletes and shapes public interpretations of women's competitiveness; the *framing* of these stories–particularly the emphasis on competitive equality–determines how audiences update their gender beliefs. Second, exposure to female Olympic success can directly reshape parental beliefs about daughters' competitive potential, prompting shifts in educational investments. We examine these channels using two sources of evidence: (i) content

analysis of media coverage of Olympic medalists and (ii) household survey data capturing parental attitudes and investment decisions.

6.1. Media Coverage

We begin by examining the media channel through which female Olympic success may influence gender beliefs. Our hypothesis is that media coverage not only publicizes female athletic achievements but also frames them in ways that challenge traditional gender stereotypes. Specifically, we distinguish between coverage that emphasizes *competitive equality*—which highlights women's ability to succeed in demanding competitive environments–and coverage that stresses *national pride*—which celebrates collective achievement without directly confronting gender stereotypes.

During the study period (1980s–2000s), China lacked widespread internet access and social media. State-controlled outlets were thus the dominant–and often sole–source of information, giving official coverage exceptional influence over public discourse. The framing of female versus male Olympic achievements was therefore critical in shaping how the public perceived athletic success and, in turn, how these perceptions translated into evolving beliefs about gender and competition.

To investigate this mechanism, we analyze textual data from *People's Daily*—the most influential and authoritative newspaper in China during this period. As the official mouthpiece of the Chinese Communist Party and the organ of its Central Committee, *People's Daily* played a unique role in shaping public narratives. It achieved unmatched nationwide penetration: government agencies, state-owned enterprises, and educational institutions were required to subscribe, ensuring circulation in virtually every prefecture and making it the primary channel through which citizens accessed political and social information. Moreover, *People's Daily* set the tone for propaganda and news framing nationwide; its coverage served as a template for provincial and local outlets reproducing the same narratives and ideological emphases. Together, these features made it the central conduit through which official messages reached and influenced the population.

We test two key questions. First, did media coverage of male and female medalists differ in frequency, emphasis, or narrative framing? Second, did the impact of female medalists stem primarily from *thematic framing*–particularly when reports emphasized women's competitive capacity and success in high-stakes contests–or simply from the *volume* of coverage they received?

Data and Measurement. Our analysis covers 329 Chinese Olympic medalists from 1984–2004, including 228 women and 104 men. We collect all *People's Daily* articles published during this period, yielding 52,932 Olympic-related pieces. Among these, 14,646 articles

mention Olympic athletes by name, forming our main dataset for analysis.

Our primary objective is to identify media narratives that frame female athletic success through the lens of competitive equality–stories that link women's achievements to demonstrations of competitive capacity and the breaking of barriers in high-stakes contests. Such coverage emphasizes women's ability to excel in demanding, high-pressure environments traditionally perceived as male-dominated domains. In the analysis below, we quantify both the intensity and thematic content of this coverage to assess how differential framing may have shaped public perceptions of female competitiveness.

Two examples illustrate this framing. Coverage of Deng Yaping–who dominated Olympic women's table tennis by winning all gold medals in both the 1992 and 1996 Games–invoked the phrase "women have held up half the sky" to portray China's female athletes as evidence of women's equal capability with men.[9] Similarly, coverage of Zhang Shan, who won the mixed-gender skeet-shooting event at the 1992 Barcelona Olympics by defeating all male and female competitors, celebrated her victory with the phrase "women are not inferior to men."[10]

To systematically identify such competitive equality framing in *People's Daily* coverage, we employ a supervised machine-learning approach. We segment 14,646 athlete-related articles into 91,507 sentences and manually annotate a training set: 500 sentences containing competitive equality themes (e.g., "women hold up half the sky," "women are not inferior to men") and 5,000 sentences unrelated to these themes. We then fine-tune a pre-trained RoBERTa language model to classify each sentence, labeling an article as *competitive-equality-related* if it contains at least one such sentence. The classifier achieves over 95 percent accuracy on held-out validation data and identifies 1,963 competitive equality sentences across 1,070 articles. Further technical details appear in Appendix D.

As a placebo exercise, we apply the same methodology to identify national-pride discourse–articles emphasizing China's international standing, collective glory, or patriotic sentiment. The training dataset contains 500 sentences expressing national pride (e.g., "glory for the motherland," "national honor") and 5,000 control sentences without such themes. The fine-tuned model detects 2,348 national-pride sentences across 1,304 articles.

These classifications enable the construction of athlete-year–level measures of thematic emphasis across time and individuals. We aggregate article-level observations to the

[9] *People's Daily*, August 2, 1996: *"Heroic women, admired by the world, have held up half the sky on China's gold medal tally..."*

[10] *People's Daily*, August 14, 1992: *"On July 28, Zhang Shan, showing that women are not inferior to men, courageously won the gold medal in skeet shooting..."*

Table 5. *Gender Differences in Olympic Medalists' Media Coverage*

	Dependent Variable:		
	Number of Reports (log)	Competitive Equality Share	National Pride Share
	(1)	(2)	(3)
Female Medalist	0.0138	0.0982***	0.0154
	(0.134)	(0.0192)	(0.0232)
Sport FE	Y	Y	Y
Year FE	Y	Y	Y
Mean	2.33	0.14	0.19
N	329	329	329
R^2	0.470	0.488	0.533

Notes: This table examines gender differences in Olympic medalists' media coverage characteristics using People's Daily article data. The dependent variables are the total number of articles mentioning each athlete in logarithm (column (1)), the share of coverage containing gender competitive equality themes identified through supervised machine learning (column (2)), and the share containing national pride themes (column (3)). All specifications include sport fixed effects and Olympic year fixed effects. Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.

athlete level and generate three key indicators for each medalist: (i) coverage intensity–the total number of *People's Daily* articles featuring the athlete following an Olympic medal; (ii) competitive-equality content share–the proportion of an athlete's coverage discussing competitive-equality themes; and (iii) national-pride content share–the proportion of coverage emphasizing national-pride narratives. These variables allow us to trace how both the scale and framing of media attention vary systematically across athletes and over time.

Gender Differences in Media Coverage. We first examine whether there are significant differences between female and male medalists in coverage intensity and thematic content.

$$y_{ikt} = \alpha + \beta \cdot \text{Female Medalist}_i + \gamma_k + \delta_t + \epsilon_{ikt}. \tag{9}$$

where y_{ikt} represents three measures for medalist i in sport k medal year δ_t: coverage intensity, competitive equality share, and national pride share. Female Medalist$_i$ is an indicator for female athletes, while γ_k and δ_t capture sport and medal year fixed effects, respectively.

Table 5 presents the results. We find that female and male medalists receive comparable coverage volume, with column (1) showing no statistically significant difference in article counts. However, the content of coverage differs systematically by gender. Female medalists' coverage is significantly more likely to emphasize competitive equality themes (column (2)), with the share of such content being approximately 10 percentage points higher (equivalent to 70% of the sample mean). In contrast, national pride

content shows no significant gender difference (column (3)), suggesting that both male and female medalists are equally likely to be framed in patriotic terms.

Heterogeneity by Coverage Characteristics. We next examine whether the impact of female medalists varies with media coverage characteristics–specifically, whether effects are driven by reporting intensity or by thematic framing. If media serve as the transmission channel for changing gender stereotypes, larger effects should arise from athletes whose coverage stresses female's competitive capacity narratives rather than from those who simply receive more attention. In contrast, narratives centered on national pride should not exhibit similar heterogeneity, as they do not directly challenge gender stereotypes or promote women's empowerment.

We assess these predictions through subsample analysis. Athletes are divided into high- and low-coverage groups based on whether their *People's Daily* coverage exceeds the sample median for each attribute–reporting intensity, competitive-equality content share, and national-pride content share. We estimate the baseline specification (Equation 1) separately for each subgroup and test differences across them by including triple interaction terms (Female $\times$ Medal Cohort $\times$ High Type), where *High Type* equals one if an athlete's coverage lies above the median for the relevant dimension.

Table 6 summarizes results along these three dimensions. Coverage intensity does not influence the estimated effects: both high- and low-coverage female medalists generate similar positive impacts, and the interaction term is small and insignificant. By contrast, thematic framing matters substantially. Female medalists whose media portrayals emphasize competitive-equality themes show markedly larger effects than those with weaker competitive-equality framing, and the corresponding interaction term is positive and highly significant. National-pride framing, in turn, displays little heterogeneity–effects are similar across high- and low-content groups, and differences are statistically insignificant.

Together, these findings indicate that media narratives, rather than exposure volume, drive the observed local gender responses. Female Olympic success becomes socially transformative when coverage explicitly links athletic achievement to women's broader capabilities, directly challenging prevailing stereotypes about female potential.

6.2. Shifts in Parental Beliefs and Educational Investment in Daughters

We now explore the second mechanism: whether the observed effects operate through shifts in parental beliefs and household investment decisions. The underlying hypothesis is that salient examples of hometown female athletes succeeding in high-stakes competitions reshape parents' stereotypes about their daughters' competitive capacity, leading to stronger educational investments and higher expectations for girls' academic

Table 6. *People Daily Coverage and Female Medalist Exposure*

Group by	Dependent Variable: Years of Schooling								
	Number of Reports			Gender Equality			National Pride		
	High	Low	Both	High	Low	Both	High	Low	Both
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female×Medal Cohort	0.331***	0.315***	0.357***	0.422***	0.107	0.134**	0.329***	0.302***	0.317***
	(0.0625)	(0.0950)	(0.0801)	(0.0598)	(0.0803)	(0.0603)	(0.0666)	(0.0829)	(0.0791)
Medal Cohort×High Type			−0.000135			−0.445***			−0.0566
			(0.141)			(0.0872)			(0.118)
Female×Medal Cohort×High Type			−0.0404			0.275***			0.00533
			(0.0900)			(0.0691)			(0.0905)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
HomePref×BirthYear	Y	Y	Y	Y	Y	Y	Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y	Y	Y	Y	Y	Y
Mean	10.46	11.26	10.62	10.36	11.20	10.62	10.63	10.58	10.62
N	209,073	50,233	259,306	180,326	78,980	259,306	203,688	55,618	259,306
R^2	0.278	0.210	0.271	0.272	0.241	0.272	0.289	0.200	0.271

Notes: This table examines heterogeneity in the effect of exposure to hometown female Olympic medalists by media coverage characteristics. The dependent variable is years of schooling. Columns (1)-(3) split the sample by coverage intensity: column (1) restricts to individuals exposed to high-coverage medalists (above median number of People's Daily articles), column (2) to low-coverage medalists (below median), and column (3) pools both groups with a triple interaction term Female × Medal Cohort × High Type. Columns (4)-(6) repeat this analysis splitting by gender equality content share in coverage, while columns (7)-(9) split by national pride content share. All specifications include prefecture-by-birth year fixed effects and the Female × Post-Mao interaction term. Control variables include ethnicity, hukou type, and migration status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

and career outcomes. This mechanism is grounded in prior research showing that parental beliefs and preferences play a central role in shaping children's educational trajectories (Abdulkadiroğlu, Pathak, Schellenberg, and Walters 2020).

Specifically, we analyze two complementary dimensions of parental responses using nationally representative survey data. First, motivated by evidence that fathers play a particularly important role in shaping children's educational and occupational outcomes (Tungodden and Willén 2023; Aneja, Farina, and Xu 2025), we examine whether exposure to hometown female medalists shifts fathers' educational expectations for daughters relative to sons, and whether mothers exhibit similar patterns. Second, we examine whether such exposure is associated with narrower gender gaps in education-related household spending between daughters and sons.

We begin by examining whether the emergence of female Olympic medalists was associated with shifts in parental education expectations using data from the 2010 China Family Panel Studies (CFPS), a nationally representative survey covering 128 prefecture-level cities. The CFPS surveys parents of children aged 0–15 and collects detailed information on each child's demographics, education, living conditions, health, and parental beliefs about childrearing. Our analysis includes all surveyed cities in the full sample.

The CFPS elicits parental educational aspirations by asking parents to indicate the highest level of education they hope their child will attain. Response categories range from "illiterate/semi-literate" to "doctoral degree," with intermediate options including primary school, junior high school, senior high school, associate college, bachelor's degree, and master's degree. We convert these responses into years of schooling and construct binary indicators corresponding to key educational thresholds. To test whether parental aspirations differ by child gender, we compare expectations for daughters and sons.

We construct Medal Exposure$_p$, a binary variable equal to 1 if prefecture p, where the household is located, had produced at least one female Olympic medalist before the survey year, and 0 otherwise. This variable captures whether parents were exposed to a hometown female Olympic medalist. We estimate the following specification:

$$\begin{aligned} Expectation_{icp} = \beta_1 \text{Daughter}_i + \beta_2 \text{Medal Exposure}_p \\ + \beta_3 \text{Daughter}_i \times \text{Medal Exposure}_p + X_i'\theta + \delta_p + \lambda_c + \epsilon_{icp}, \end{aligned} \tag{10}$$

where $Expectation_{icp}$ denotes the educational expectation held by a parent (father or mother) born in cohort c and residing in prefecture p for child i. Daughter$_i$ is an indicator for whether the child is a girl. δ_p and λ_c represent prefecture and parental birth-cohort fixed effects, which absorb time-invariant local characteristics and cohort-specific trends, respectively. X_i' includes controls for parent and child characteristics, including parental education, occupation, co-residence with the child, child age, and child health status. The coefficient of interest, β_3, captures whether parents in prefectures with female Olympic medalists hold different educational expectations for daughters (relative to sons), compared to those in prefectures without female medalists.

Table 7 reports an asymmetry in how parents' educational expectations relate to female Olympic success. Panel A shows that in prefectures with female medalists, fathers expect their daughters to complete about 1.3 more years of schooling relative to sons, compared with fathers in prefectures without medalists. Decomposition by educational thresholds indicates that this effect is concentrated at the high school and college levels: fathers in exposed prefectures are 10 percentage points more likely to expect daughters (relative to sons) to complete high school, and 12.6 percentage points more likely to expect them to earn a college degree, with no significant difference at the junior-high level. These associations are specific to fathers; Panel B shows no corresponding patterns for mothers' expectations.

This parent-gender-specific pattern suggests that female Olympic success is associated with fathers forming higher beliefs about their daughters' educational potential, while mothers show no corresponding update in perceptions of their daughters' capabilities.

Table 7. *Effects on Parental Educational Expectations by Child Gender*

	Dependent Variable: Parents' Educational Expectations for Children			
	Years of Schooling	Junior High	High School	College
Panel A: Fathers	(1)	(2)	(3)	(4)
Daughter × Medal Exposure	1.277**	0.0229	0.0998*	0.126**
	(0.640)	(0.0380)	(0.0557)	(0.0631)
Daughter	-0.742*	-0.00659	-0.0541	-0.0879*
	(0.392)	(0.0170)	(0.0340)	(0.0509)
N	640	640	640	640
R^2	0.803	0.587	0.700	0.780
Panel B: Mothers	(1)	(2)	(3)	(4)
Daughter × Medal Exposure	-0.539	-0.0194	-0.0318	-0.0158
	(0.501)	(0.0181)	(0.0387)	(0.0467)
Daughter	0.0290	0.00413	-0.00557	-0.0365
	(0.274)	(0.0111)	(0.0203)	(0.0277)
N	1,350	1,350	1,350	1,350
R^2	0.611	0.550	0.603	0.623
Controls	Y	Y	Y	Y
HomePref FE	Y	Y	Y	Y
BirthYear FE	Y	Y	Y	Y

Notes: This table examines how exposure to hometown female Olympic medalists is associated with parental educational expectations, separately for father (Panel A) and mother (Panel B) respondents, using data from the China Family Panel Studies (CFPS) 2010. The survey asks parents: "What is the highest level of education you hope your child will attain?" with response options ranging from illiterate to doctoral degree. The dependent variables are expected years of schooling (column (1)) and binary indicators for whether parents expect the child to complete junior high (column (2)), high schoo (column (3)), or college or above (column (4)). Medal Exposure is an indicator equal to one if the prefecture where the household is located had produced at least one female Olympic medalist prior to the survey year. All specifications include prefecture fixed effects and parental birth-cohort fixed effects. Control variables include parental education, occupation, coresidence with the child, child age, and child health status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

This finding aligns with recent evidence that parents tend to overestimate gender gaps in competitiveness, with fathers' biased beliefs about daughters playing a particularly important role in shaping gender-differentiated parental choices (Tungodden and Willén 2023).

We next examine whether exposure to female Olympic medalists alters parents' educational investment patterns using expenditure data from the China Household Income Project (CHIP). Our analysis focuses on single-child households with children aged 6-18 across three survey waves spanning our study period (1988, 1995, 1999). The CHIP data provide rich household expenditure information, allowing us to construct two key spending categories: tuition fees and technical training expenditures.

Since the CHIP is a longitudinal survey spanning multiple waves, we can exploit

the staggered timing of female medalists' emergence across prefectures. We estimate whether the daughter-son educational investment gap narrows after a hometown female athlete wins an Olympic medal using the following specification:

$$\begin{aligned}\text{Expenditure}_{ipt} =& \beta_0 + \beta_1 \text{Daughter}_i + \beta_2 \text{Female Medal}_{pt} \\ &+ \beta_3 (\text{Daughter}_i \times \text{Female Medal}_{pt}) + \gamma X_i + \delta_p + \theta_t + \varepsilon_{ipt}, \quad (11)\end{aligned}$$

where Expenditure_{ipt} represents household expenditure in log for household i in prefecture p at survey year t; Daughter_i is an indicator for female child; Female Medal_{pt} indicates whether prefecture p had produced a female Olympic medalist by year t; X_{ip} includes controls for parental age, education, occupation, household size, and household income (in log); δ_p and θ_t represent prefecture and survey year fixed effects, respectively. The coefficient of interest, β_3, captures differential investment in daughters' education when parents have been exposed to hometown female medalists.

Table 8 shows that the emergence of a female Olympic medalist is associated with a smaller gender gap in educational investment between daughters and sons. The pattern is consistent across two expenditure categories—tuition fees and training fees (columns (1) and (2)). These effects are economically significant: the estimated coefficients on the Daughter dummy are negative and significant in both columns, indicating that in the absence of female medalists, families invest considerably fewer educational resources in daughters than in sons. The emergence of female medalists narrows this gap, reducing the tuition disparity by 4.52 percent and the training expenditure gap by 1.75 percent.

To ensure our findings capture changes in educational investment rather than general household spending, we conduct placebo tests using non-education expenditures–housing and healthcare. As shown in columns (3) and (4), female medalists have no comparable effects on these categories, indicating that the observed shifts are specific to education. Overall, the results support our hypothesis that female Olympic success reshapes parental beliefs about daughters' potential and returns to education, reducing gender bias in household investment.

Transition and Dropout. These findings shed light on the transition patterns documented in Section 5.1, where female medalist exposure produces large effects at the junior and senior high school transitions but no significant effect at college entry. This heterogeneity reflects differences in parental influence across educational stages within China's highly selective system.

At the junior and senior high transitions, parents play a pivotal role in deciding whether to continue their children's schooling and bear the associated costs. These stages mark critical junctures where competitive tracking intensifies and families weigh the expected

Table 8. *Changes in Household Educational Expenditure*

	Dependent Variable: Yearly Household Expenditure (RMB, log)			
	Tuition Fee	Training Fee	Housing Exp.	Healthcare Exp.
	(1)	(2)	(3)	(4)
Daughter × Female Medal	0.0452*	0.0175*	-0.0245	0.0131
	(0.0256)	(0.00991)	(0.0451)	(0.0312)
Daughter	-0.0621**	-0.0315**	0.0416	0.0151
	(0.0336)	(0.0167)	(0.0516)	(0.0215)
Female Medal	0.00554	0.00529	-0.0196	-0.0212
	(0.00661)	(0.00859)	(0.0467)	(0.0339)
Controls	Y	Y	Y	Y
Prefecture FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
N	32,513	32,513	32,513	32,513
R^2	0.125	0.081	0.347	0.215

Notes: This table examines the effect of exposure to hometown female Olympic medalists on parental educational investment using household expenditure data from the China Household Income Project (CHIP) surveys conducted in 1988, 1995, and 1999. The dependent variables are annual household expenditures in logarithm on tuition fees (column (1)), technical training fees (column (2)), housing (column (3)), and healthcare (column (4)). The sample is restricted to single-child households with children aged 6-18. All specifications include prefecture fixed effects and survey year fixed effects. Control variables include father's years of schooling, mother's years of schooling, parental hukou status, household size, and household income in logarithm. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

returns to further education. Female medalist exposure appears to shift these parental decisions, leading to higher female representation in senior high school. In contrast, college admission depends almost entirely on *Gaokao* performance, leaving little scope for parental influence. This explains why the conditional college enrollment gap among senior high graduates remains unchanged. Nevertheless, because more girls progress to senior high school, the overall likelihood that daughters attend college–accounting for earlier transitions–has risen relative to sons.

Norms and Attitudes. Beyond changes in parental beliefs and household investment, we also document broader shifts in societal attitudes toward gender. Using data from the Chinese General Social Survey (CGSS), we find that individuals exposed to hometown female medalists express more egalitarian views on gender roles and weaker adherence to traditional beliefs about women's domestic responsibilities (Appendix E).

Taken together, these findings provide consistent evidence that female Olympic success challenges prevailing gender stereotypes, shifts fathers' beliefs about daughters' competitive potential, and translates these attitudinal changes into increased educational investment.

6.3. Children's Self-Perceptions and Aspirations

While the previous analysis demonstrates that fathers update their beliefs about daughters' competitive capacity, the mechanism may also operate through an alternative channel–changes in girls' own self-perceptions. Exposure to successful female athletes could influence how girls evaluate their academic abilities, competitive potential, and career aspirations. Such adjustments in self-perception represent an additional pathway through which female Olympic success may improve educational outcomes: beyond increased parental investment, girls themselves may form stronger confidence and ambition when presented with salient examples of female competitive achievement.

To examine this possibility, we analyze children's self-reported attitudes from the 2010 wave of the China Family Panel Studies (CFPS). A key advantage of this dataset is its dedicated children's questionnaire, in which respondents aged 10–15 report their own attitudes rather than having parents answer on their behalf. The survey asks children to assess themselves across multiple dimensions: expected years of education, academic performance relative to peers, competence as a student, effort in studying, compliance with school rules, discipline at home, leadership capability, and career aspirations for competitive occupations. These measures jointly capture self-assessed ability and behavioral orientations that could plausibly respond to exposure to salient female role models.

We estimate a similar specification to Equation (10), replacing parental expectations with children's self-reported attitudes as the dependent variable.[11] These outcomes include expected years of schooling, self-assessed academic performance and competence, effort and discipline in studying, and career aspirations. As reported in Appendix Table A6, we find no evidence that such exposure is significantly associated with shifts in girls' self-reported attitudes—the interaction terms are statistically insignificant across all dimensions. This null result contrasts sharply with the large and consistently positive associations with fathers' expectations reported in Table 7.

Although we find no detectable effects on girls' self-reported attitudes, this does not rule out self-perception as a contributing mechanism. Two factors likely limit our ability to observe such effects in the CFPS sample. First, young children's self-assessments may be inherently less stable and precisely measured than parental expectations or concrete investment behaviors. Second, in the Chinese educational context–where parents retain substantial authority over schooling decisions–parental belief updating may represent the primary pathway through which female Olympic success shapes educational outcomes. Consistent with this interpretation, we find strong effects on

[11] Since the outcome of interest is children's attitudes, we include prefecture and child birth-cohort fixed effects. Control variables remain the same as in Equation (10).

fathers' expectations (Table 7) alongside null effects on children's self-perceptions, suggesting that shifts in parental decision-making are the dominant mechanism underlying our main results.

6.4. Role Model Effects?

Our analysis supports a mechanism operating through media-driven changes in beliefs about female competitive capacity. An alternative interpretation is that female medalists serve as role models who directly inspire girls' educational choices through individual identification. Role model effects occur when exposure to successful individuals sharing similar characteristics—such as gender, race, or socioeconomic background—influences observers' beliefs about their own capabilities and alters their subsequent decisions. This mechanism operates primarily through individual identification: seeing someone "like me" succeed in a particular domain can expand perceived possibilities and strengthen motivation to pursue similar paths (Dee 2004; Carrell, Page, and West 2010; Beaman, Duflo, Pande, and Topalova 2012; Porter and Serra 2020).[12] Under this interpretation, female medalists would motivate girls to pursue education by showing that women can achieve excellence in competitive environments.

Our proposed hypothesis differs from this traditionally defined role-model effect, which primarily operates among individuals who directly identify with the successful figure–in this case, young girls who view female medalists as relatable exemplars. In contrast, we emphasize shifts in collective perceptions of women's capabilities in high-stakes competition at the community level. Such changes influence not only girls themselves but also parents, teachers, and other decision-makers who shape educational opportunities and career trajectories.

We conduct several tests to distinguish between these explanations. First, if role model effects drive our findings, we should observe stronger impacts on sport-related career choices, as athletic role models would particularly inspire careers in sports or related fields. Appendix Table A7 examines occupational choices across four sports-related categories: professional athletes, sports agents, sports retail workers, and all sports-related occupations combined. Across all categories, the coefficients are small and statistically insignificant, providing no evidence that female medalists inspire greater participation in athletic careers.

[12]The literature identifies several mechanisms through which role models influence behavior and outcomes. First, they provide information about previously unknown opportunities, requirements, and potential returns in specific fields (Jensen 2010; Nguyen 2008). Second, observing successful individuals with similar backgrounds updates beliefs about one's own ability to succeed in those fields (Beaman, Duflo, Pande, and Topalova 2012). Third, they disrupt stereotypes by demonstrating that success is possible for underrepresented groups, thereby reducing psychological barriers to entry (Carrell, Page, and West 2010; Porter and Serra 2020).

Second, role model effects cannot easily explain why only female medalists generate effects while male medalists do not. Male Olympic champions should serve as equally inspiring role models for boys, potentially encouraging greater educational investment by demonstrating the value of achievement and perseverance. The asymmetric gender pattern we observe is more consistent with female medalists specifically challenging stereotypes about women's competitive capacity than with a general inspirational mechanism.

Our empirical evidence points toward a broader mechanism: female Olympic success becomes transformative not because individual girls identify with specific athletes, but because media coverage challenges societal beliefs about women's ability to succeed in high-stakes competition, reshaping their parents' attitudes that influence educational investment decisions.

7. Conclusion

Education is a crucial determinant of gender inequality, shaping gaps in employment, earnings, and fertility–particularly in developing countries (Goldin 2006; Duflo 2012; Jayachandran 2015). This paper examines whether and how female Olympic success reshapes beliefs about women's competitive capacity and advances gender equality in education. Using the Chinese context, we show that hometown female medalists significantly narrow gender gaps in years of schooling. To address potential endogeneity in medal timing, we employ a Bartik-style instrument based on the exogenous redistribution of medal opportunities following the Soviet Union's collapse, which reinforces the causal interpretation of our results.

We identify two complementary mechanisms underlying these effects. First, media framing matters: coverage emphasizing competitive-equality narratives–portraying female victories as evidence of women's capability in high-stakes competition–generates larger impacts than coverage centered on national pride. Second, exposure to female medalists systematically shifts fathers' beliefs about daughters' competitive potential, leading to higher educational expectations and greater household investment in daughters' schooling. These effects are specific to fathers and daughters, with no comparable responses from mothers or among sons. Together, the results demonstrate that publicized female competitive achievement can challenge entrenched gender stereotypes and yield measurable progress toward gender equality.

Our findings highlight two directions for future research. First, through what channels do these belief shifts diffuse beyond parent–child relationships? Understanding whether exposure shapes teachers' expectations or employers' behavior would clarify how counter-stereotypical exemplars catalyze broader social change. Second, the

importance of media framing underscores the power of narrative in diffusing progressive values. Future work could assess whether similar communication strategies can promote inclusion and equality across other social domains.

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Online Appendix

A. Supplementary Figures

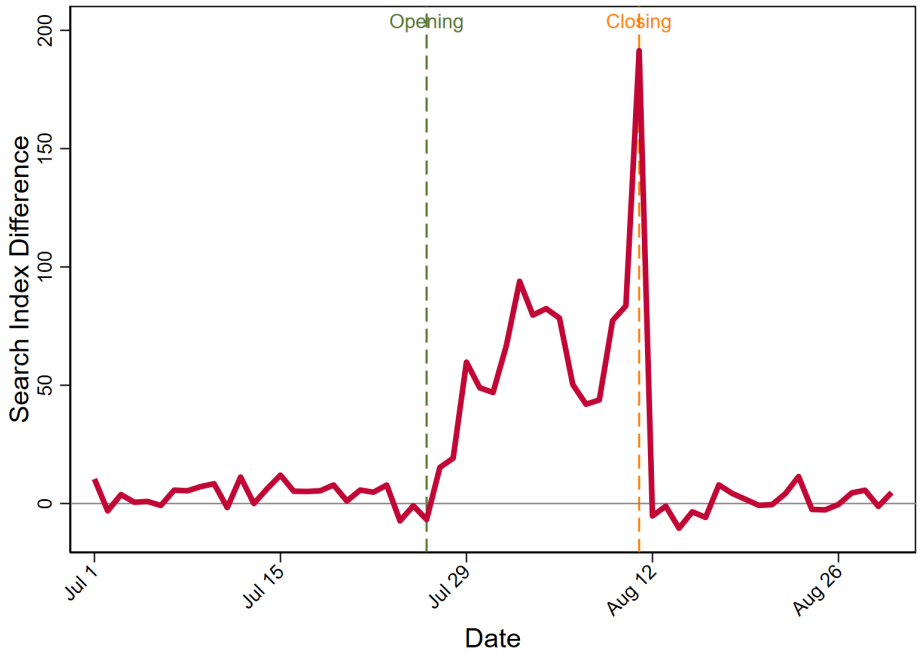


Figure A1. *Difference in Baidu search index for "Olympics" between medalist and non-medalist cities during 2024 Paris Olympics. Medalist cities are those whose athletes won medals at the 2024 Paris Olympics, while non-medalist cities had no medal winners. The figure demonstrates that medalist cities experienced significantly higher search volumes for Olympic content, indicating elevated local interest and engagement with Olympic content when hometown athletes achieve success.*

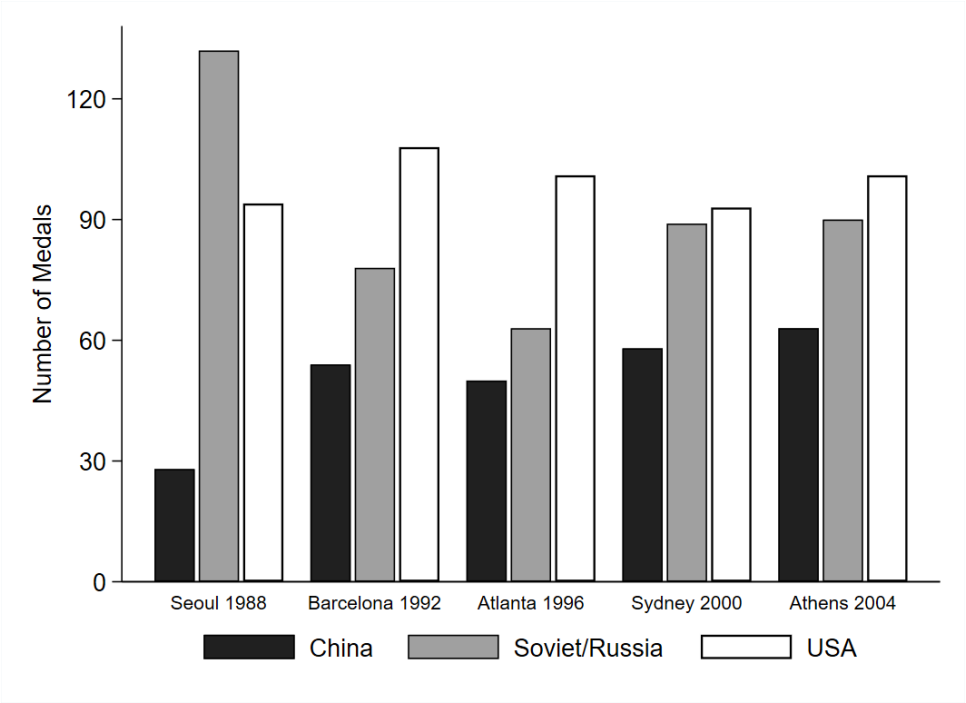


Figure A2. *Olympic Medal Statistics: China, Soviet Union/Russia, and USA (1988-2004). The figure shows the number of medals won by China, Soviet Union/Russia, and the USA across five Olympic Games from Seoul 1988 to Athens 2004. The data illustrates China's rise in Olympic performance following the Soviet collapse in 1991.*

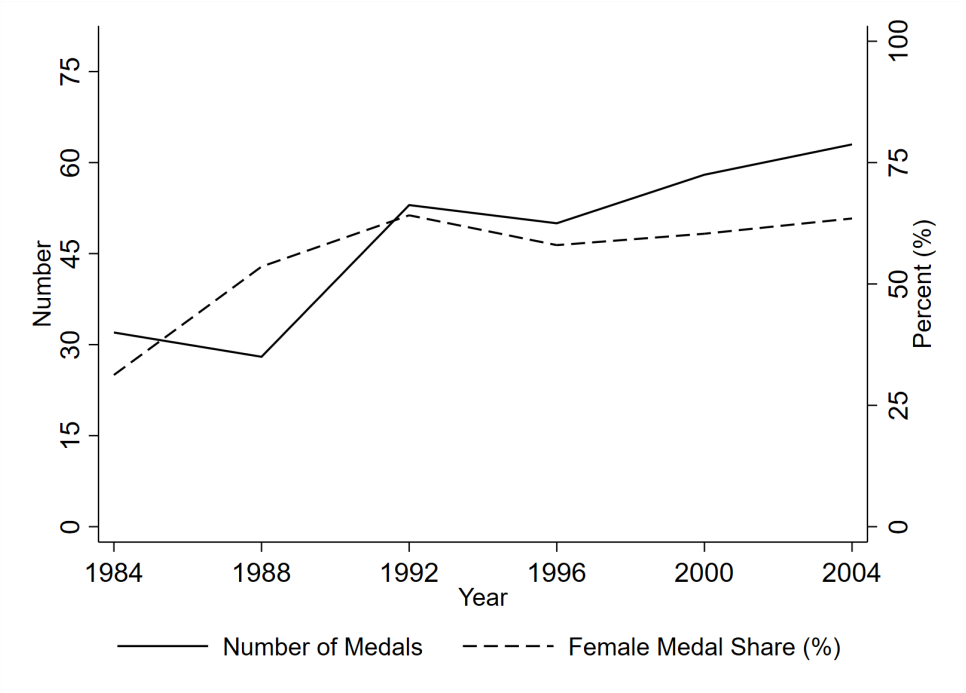


Figure A3. *Chinese Olympic Medals and Female Representation Over Time (1984-2004). This figure illustrates China's Olympic medal performance and female representation across six Summer Olympics from Los Angeles 1984 to Athens 2004. The solid line (left axis) shows the total number of medals won by Chinese athletes at each Olympic Games. The dashed line (right axis) represents the percentage of medals won by female athletes.*

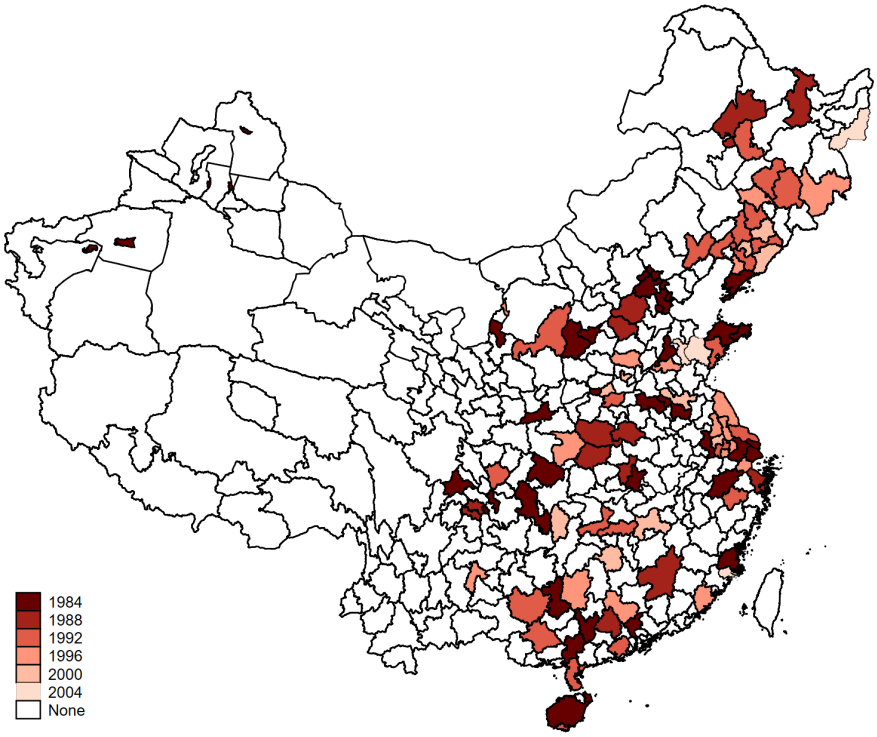


Figure A4. *Year of First Female Olympic Medalist by Hometown Prefecture (1984-2004). This map illustrates the geographic and temporal distribution of China's first female Olympic medalists across prefecture-level administrative units between 1984 and 2004.*

B. Supplementary Tables

Table A1. *Summary Statistics*

Variable	Obs	Mean	Std. dev.	Min	Max
Panel A: Demographic Characteristics					
Female	264,190	0.495	0.500	0	1
Birth year	264,190	1977.023	10.132	1960	1995
Han ethnic	264,190	0.944	0.230	0	1
Household hukou	264,190	0.966	0.181	0	1
Migrant	264,190	0.113	0.316	0	1
Panel B: Educational Attainment					
Years of schooling	264,190	10.615	3.364	0	19
Transition to primary school	258,857	0.989	0.104	0	1
Transition to junior high school	256,000	0.893	0.309	0	1
Transition to high school	228,692	0.425	0.494	0	1
Transition to college	97,216	0.314	0.464	0	1
Dropout during primary school	27,308	0.087	0.282	0	1
Dropout during junior high school	131,476	0.028	0.164	0	1
Dropout during high school	66,724	0.018	0.133	0	1
Dropout during college	30,492	0.009	0.097	0	1

Notes: This table presents summary statistics for the main analytical sample drawn from China's 2015 1% Population Mini-Census. The sample includes 264,190 individuals born between 1960 and 1995 from 91 prefectures that produced at least one female Olympic medalist between 1984 and 2004.

Table A2. *Top 10 Olympic Sport Events by Medal Count (1984-2004)*

Sport	Proportion (%)	Female Share (%)
Diving	13.57	47.37
Gymnastics	13.21	29.73
Shooting	12.14	38.24
Weightlifting	12.14	23.53
Table Tennis	11.79	57.58
Swimming	7.50	100.00
Badminton	7.50	80.95
Judo	5.00	100.00
Athletics	4.64	84.62
Fencing	2.50	57.14
Other	10.00	82.14

Notes: This table presents the top 10 Olympic sport events ranked by the number of medals won by Chinese athletes between 1984 and 2004, based on official records from the International Olympic Database."Other" includes all remaining sports not listed in the top 10.

Table A3. *Robustness Checks: Alternative Treatment Definitions*

	Dependent Variable: Years of Schooling			
	(1)	(2)	(3)	(4)
Female × Medal Cohort at 6	0.232***			
	(0.0519)			
Female × Medal Cohort at 12		0.322***		
		(0.0503)		
Female × Medal Cohort at 15			0.344***	
			(0.0494)	
Female × Exposure Duration				0.0323***
				(0.00491)
Controls	Y	Y	Y	Y
HomePref×BirthYear	Y	Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y
N	264,190	264,190	264,190	264,190
R^2	0.270	0.270	0.271	0.271

Notes: This table presents robustness checks using alternative definitions of treatment exposure. The dependent variable is years of schooling in all columns. Column (1) defines Medal Cohort as individuals aged 6 or younger when their prefecture first produced a female Olympic medalist. Column (2) uses age 12 as the cutoff. Column (3) uses age 15 as the cutoff. Column (4) uses a continuous treatment variable measuring the number of years individuals were exposed to female Olympic medalists before age 18. All specifications include prefecture-by-birth year fixed effects and the Female × Post-Mao interaction term. Control variables include ethnicity, hukou type, and migration status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

Table A4. *Robustness Checks: Alternative Samples and Specifications*

	Dependent Variable: Years of Schooling						
	Exclude 1984 Medal Pref.	Expand Sample	Drop Migrants	Control Compul-sory Edu.	Control Gender-Pref. FE	Control GDP per Capita	Control Primary Schools
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female × Medal Cohort	0.330***	0.577***	0.327***	0.306***	0.325***	0.315***	0.318***
	(0.0658)	(0.0453)	(0.0519)	(0.0515)	(0.0400)	(0.0515)	(0.0514)
Controls	Y	Y	Y	Y	Y	Y	Y
Pref.×Birth Year FE	Y	Y	Y	Y	Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y	Y	Y	Y
Female×Pref. FE					Y		
Female×GDP per Capita (log)						Y	
Female×Primary Schools (log)							Y
N	165,413	359,409	229,593	264,190	264,190	264,190	264,190
R^2	0.211	0.336	0.277	0.270	0.272	0.270	0.270

Notes: This table presents robustness checks for the baseline difference-in-differences estimates. The dependent variable is years of schooling in all columns. Column (1) excludes prefectures that produced their first female Olympic medalist in 1984. Column (2) expands the sample to include all 336 prefectures and birth cohorts from 1946 to 2000. Column (3) excludes individuals who migrated to other prefectures. Column (4) controls for prefecture-level compulsory education policy implementation interacted with birth cohort. Column (5) includes gender-by-prefecture fixed effects. Column (6) controls for the interaction between female and GDP per capita (in log). Column (7) controls for the interaction between female and the number of primary schools (in log). When prefecture-year data for GDP per capita or number of primary schools are missing, we impute using the corresponding provincial average for that year. All specifications include prefecture-by-birth year fixed effects and the Female×Post-Mao interaction. Control variables include ethnicity, hukou status, and migration status. Standard errors clustered at the prefecture level are reported in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A5. *Soviet/Russian Female Athletes Participation by Sport (1988 vs 1996)*

	1988 Soviet		1996 Russia	
Sport	#Athletes	Proportion (%)	#Athletes	Proportion (%)
Athletics	44	8.35	47	6.37
Rowing	23	12.57	6	3.06
Handball	15	15.15	0	0.00
Basketball	12	14.46	11	8.40
Volleyball	12	14.29	12	9.60
Swimming	8	3.33	13	3.95
Gymnastics	6	7.14	7	7.14
Shooting	6	5.83	8	6.84
Canoeing	5	7.81	4	3.48
Fencing	5	7.81	6	7.14
Diving	4	11.11	4	7.55
Cycling	4	6.67	7	6.60
Synchronized Swimming	3	6.98	9	14.06
Table Tennis	3	6.67	2	2.60
Tennis	3	6.25	3	3.70
Archery	3	5.08	3	4.92
Rhythmic Gymnastics	2	5.41	8	9.64
Sailing	2	4.76	0	0.00
Equestrian	2	3.70	0	0.00
Judo	0	0.00	6	4.17
Hockey	0	0.00	0	0.00
Beach Volleyball	0	0.00	0	0.00
Softball	0	0.00	0	0.00
Badminton	0	0.00	2	2.35
Football	0	0.00	0	0.00
Average	8	7.67	6	4.46

Notes: This table shows the number and proportion of Soviet (1988) and Russian (1996) female athletes across Olympic sports. Proportions are calculated as the share of total female participants in each sport, excluding Chinese athletes. The data illustrates substantial cross-sport variation in Soviet female participation rates and the heterogeneous impact of political dissolution on competitive landscapes across different disciplines.

Table A6. *Effects on Children's Self-Reported Attitudes*

	Dependent Variable: Children's Self-reported Attitudes							
	Education	Achievement	Competence	Diligence	Compliance	Discipline	Leadership	Career
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Daughter × Medal Exposure	0.0893	-0.144	0.0272	0.00935	-0.244	0.0280	0.0272	-0.0607
	(0.252)	(0.115)	(0.111)	(0.656)	(0.232)	(0.407)	(0.111)	(0.0616)
Daughter	-0.0853	0.248***	0.199***	0.314	0.200	0.183	0.199***	0.0189
	(0.383)	(0.0697)	(0.0682)	(0.508)	(0.135)	(0.286)	(0.0682)	(0.0250)
Controls	Y	Y	Y	Y	Y	Y	Y	Y
HomePref FE	Y	Y	Y	Y	Y	Y	Y	Y
BirthYear FE	Y	Y	Y	Y	Y	Y	Y	Y
N	1,429	1,406	1,408	1,411	1,411	1,411	1,408	1,380
R^2	0.569	0.483	0.486	0.373	0.557	0.449	0.486	0.446

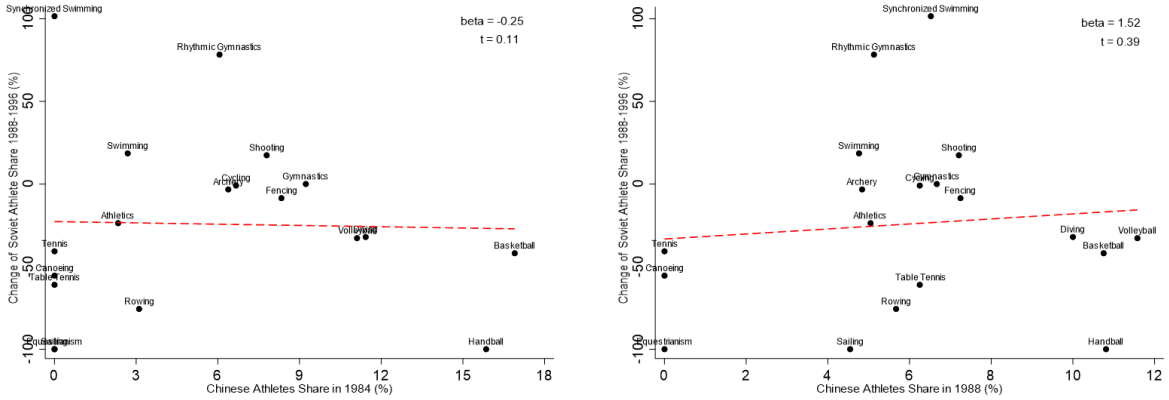
Notes: This table examines the association between exposure to hometown female Olympic medalists and children's self-reported attitudes using data from the China Family Panel Studies (CFPS) 2010. The dependent variables are: expected years of education (column (1)), self-assessment of academic performance on a 1-5 scale (column (2)), self-assessment of competence as a student on a 1-5 scale (column (3)), self-reported effort in studying on a 1-5 scale (column (4)), self-reported compliance with school rules on a 1-5 scale (column (5)), self-reported discipline in completing homework before playing on a 1-5 scale (column (6)), self-assessment of leadership capability on a 1-5 scale (column (7)), and preference for competitive careers—a binary indicator equal to 1 for careers involving high social evaluation, respect, income, or independence (column (8)). Medal Exposure is an indicator equal to one if the respondent's prefecture had produced at least one female Olympic medalist prior to the survey year. All specifications include prefecture fixed effects and child's birth year fixed effects. Control variables include parental education, occupation, survival status, coresidence with the child, child birth year, and child health status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

Table A7. *Female Medalist Effects on Sport-Related Occupation Choice*

	Dependent Variable: Occupation Choice			
	Athlete	Sport Agent	Sport Retail	All Related
	(1)	(2)	(3)	(4)
Female × Medal Cohort	-0.000255	0.000157	0.000369	0.000272
	(0.000330)	(0.000386)	(0.000833)	(0.00105)
Controls	Y	Y	Y	Y
HomePref×BirthYear	Y	Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y
Mean	0.0012	0.0018	0.0037	0.0067
N	264,190	264,190	264,190	264,190
R^2	0.012	0.015	0.019	0.017

Notes: This table examines whether exposure to hometown female Olympic medalists influences women's entry into sports-related occupations. The dependent variables are binary indicators for employment as professional athlete (column (1)), sports agent and related occupations (column (2)), sporting goods retail (column (3)), and all sports-related occupations combined (column (4)). All specifications include prefecture-by-birth year fixed effects and the Female × Post-Mao interaction term. Control variables include ethnicity, hukou type, and migration status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

C. Robustness Checks for the Bartik IV



(a) 1984 Los Angeles (b) 1988 Seoul

Figure A5. *Soviet Decline and Pre-dissolution China Participation. These figures tests whether the Soviet Union's decline in women's sports was systematically concentrated in sports where China posed larger competitiveness. Each panel shows a binscatter plot examining the relationship between China's pre-dissolution athlete participation share (x-axis) and the subsequent change in Soviet athlete participation share (y-axis) across women's Olympic events. Panel (a) uses China's participation in the 1984 Los Angeles Olympics as the pre-dissolution measure, while Panel (b) uses the 1988 Seoul Olympics.*

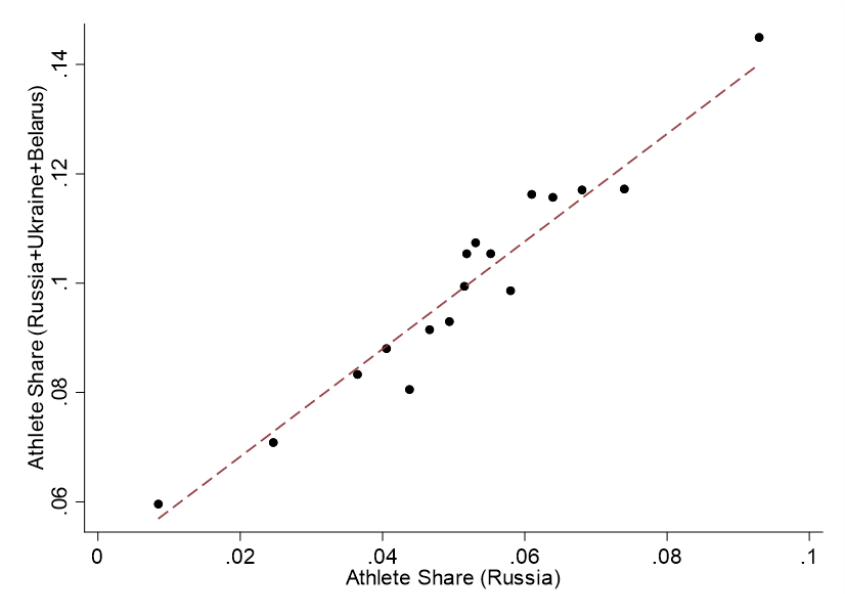


Figure A6. *Correlation between Russian and Combined Post-Soviet Athlete Participation Shares. This figure presents a binscatter plot examining the relationship between athlete participation shares across women's Olympic events for Russia alone (x-axis) versus the combined participation of Russia, Ukraine, and Belarus (y-axis) during 1996-2004. Each point represents the average participation share within bins of Russian participation, excluding Chinese athletes from the calculations. The analysis controls for sport event fixed effects. The strong positive correlation ($R^2 = 0.95$) demonstrates that Russian participation patterns closely mirror those of the broader post-Soviet region.*

Table A8. *Prefecture-level Characteristics before Soviet Dissolution and Predicted Medal Chance*

	Dependent Variable: Prefecture-level Characteristics in 1990						
	Sex ratio born before 1991	GDP per capita (yuan, thou-sand)	Primary sector share	Secondary sector share	#Primary school per 1,000	#Gym per 1,000	#Hospital per 1,000
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Predicted Medal 1992	-2.412	571.8	-4.616	-0.848	-10.76	-0.0278	2.753
	(3.812)	(632.0)	(4.971)	(4.819)	(7.130)	(0.0449)	(4.150)
Mean	0.52	2,310.52	24.55	47.57	46.38	0.24	25.28
N	91	84	84	84	84	83	84
R^2	0.001	0.010	0.010	0.000	0.027	0.005	0.005

Notes: This table examines whether the instrumental variable (predicted medal opportunities for the 1992 birth cohort) systematically predicts pre-determined prefecture-level characteristics. The dependent variables are prefecture characteristics measured before Soviet Dissolution: sex ratio of population born before 1991 (column (1)), GDP per capita in thousands of yuan in 1990 (column (2)), primary sector share of GDP in 1990 (column (3)), secondary sector share of GDP in 1990 (column (4)), number of primary schools per 1,000 residents in 1990 (column (5)), number of gymnasiums per 1,000 residents in 1990 (column (6)), and number of hospitals per 1,000 residents in 1990 (column (7)). Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.

Table A9. *Robustness Checks for Instrumental Variable Estimation*

Control pre-1991 pref. char.	Instrumental Variable Estimation						
	Dependent Variable: Years of Schooling						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female × Medal Cohort	0.714***	0.714***	0.714***	0.714***	0.724***	0.714***	0.724***
	(0.0990)	(0.0990)	(0.0990)	(0.0990)	(0.101)	(0.0990)	(0.101)
Controls	Y	Y	Y	Y	Y	Y	Y
HomePref×BirthYear	Y	Y	Y	Y	Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y	Y	Y	Y
Sex ratio×BirthYear	Y						
GDP per capital×BirthYear		Y					
1^{st} Industry Share×BirthYear			Y				
2^{nd} Industry Share×BirthYear				Y			
Primary School×BirthYear					Y		
Gym×BirthYear						Y	
Hospital×BirthYear							Y
F-statistics	141.256	143.368	142.667	142.587	138.239	143.125	138.131
N	264,190	232,713	232,713	232,713	232,713	230,696	232,713
R^2	0.003	0.003	0.003	0.003	0.003	0.003	0.003

Notes: This table presents robustness checks for the instrumental variable estimates. Columns (1)-(7) sequentially add interactions between pre-1991 prefecture characteristics and birth year fixed effects: column (1) controls for sex ratio × birth year, column (2) for GDP per capita × birth year, column (3) for primary sector share × birth year, column (4) for secondary sector share × birth year, column (5) for primary school density × birth year, column (6) for gymnasium density × birth year, and column (7) for hospital density × birth year. All specifications include prefecture-by-birth year fixed effects and the Female × Post-Mao interaction term. Control variables include ethnicity, hukou type, and migration status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

Table A10. *Placebo Tests for Instrumental Variable Estimation*

	Dependent Variable: Years of Schooling			
	1960s Cohort	1970s Cohort	1980s Cohort	1960s-1980s Cohort
	(1)	(2)	(3)	(4)
Female × Medal Cohort	0.190	2.388	3.559	-0.0980
	(2.526)	(2.126)	(3.219)	(1.651)
Controls	Y	Y	Y	Y
HomePref×BirthYear	Y	Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y
F-statistics	2.634	3.120	3.099	3.064
N	77,386	73,241	76,956	227,583
R^2	0.002	0.002	0.005	0.002

Notes: This table presents placebo tests examining whether the instrumental variable spuriously predicts educational outcomes for cohorts unaffected by the Soviet collapse. For each individual born in earlier cohorts (1960s-1980s), we assign predicted medal opportunities calculated for a corresponding later 1990s cohort from the same prefecture. All specifications include prefecture-by-birth year fixed effects and the Female × Post-Mao interaction term. Control variables include ethnicity, hukou type, and migration status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

Table A11. *Bartik IV Regression: Female Olympic Medal Effects (Event Level)*

Dependent Variable	Female Medal	
	1^{st} Stage	2^{nd} Stage
	(1)	(2)
Female × Medal Cohort		0.681***
		(0.117)
Female × Predicted Medal Cohort	0.507***	
	(0.0529)	
Controls	Y	Y
HomePref×BirthYear	Y	Y
Female×Post-Mao	Y	Y
F-statistics		91.687
N	264,190	264,190
R^2	0.886	0.004

Notes: This table reconstructs the instrumental variable using 214 detailed Olympic events rather than 29 broad sport categories. Column (1) shows the first-stage relationship between the event-level instrument and actual medal exposure, while column (2) presents the second-stage effect on years of schooling. All specifications include prefecture-by-birth year fixed effects and the Female × Post-Mao interaction term. Control variables include ethnicity, hukou type, and migration status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

Table A12. *Defining Bartik IV Shift Using Athlete from Russia, Ukraine and Belarus*

Dependent Variable	Sport-level Share		Event-level Share	
	1^{st} Stage Female×Medal Cohort	2^{nd} Stage Years of Schooling	1^{st} Stage Female×Medal Cohort	2^{nd} Stage Years of Schooling
	(1)	(2)	(3)	(4)
Female × Medal Cohort		0.707***		0.681***
		(0.101)		(0.117)
Female × Predicted Medal Cohort	0.670***		0.507***	
	(0.0579)		(0.0529)	
Controls	Y	Y	Y	Y
HomePref×BirthYear	Y	Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y
F-statistics		133.938		91.687
N	264,190	264,190	264,190	264,190
R^2	0.894	0.004	0.886	0.004

Notes: This table examines robustness to alternative definitions of the "shift" variable in the Bartik-style instrument, using combined participation of Russia, Ukraine, and Belarus. Columns (1)-(2) use sport category to construct IV, while Columns (3)-(4) use more refined event category. All specifications include prefecture-by-birth year fixed effects and the Female × Post-Mao interaction term. Control variables include ethnicity, hukou type, and migration status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.

D. Text Analysis Methodology for Media Coverage Classification

To study media coverage as a mechanism for female medalists' effects on gender equality, we employ text-based techniques to link media portrayals of athletes with their influence on local gender outcomes. In this section, we detail our methodology for systematically identifying and classifying thematic content in Olympic coverage, specifically how we define gender equality and national pride themes across different types of media reports to construct quantitative measures.

We develop comprehensive indices to capture national pride and gender equality themes by analyzing a large corpus from *People's Daily*, the official newspaper of the Chinese Communist Party's Central Committee. Given its central role in disseminating government policies and viewpoints, *People's Daily* provides a uniquely informative source for examining official narratives and policy-oriented language within Chinese media.

Our analysis begins with a dataset of 1,328,390 news articles published between 1946 and 2004. To focus specifically on content related to athletic achievements, we filter for articles mentioning Olympic medalists' names alongside terms such as "Olympics," "Sports," or "Competition." This process identifies 14,646 articles covering Olympic athletes, which we segment into 91,507 sentences for analysis.

A critical step in our methodology involves constructing well-defined training samples for classification through manual annotation. For gender equality themes, we manually identify 500 sentences containing gender equality discourse (e.g., phrases such as "hold up half the sky," "women are not inferior to men," and discussions of women's capabilities in traditionally male-dominated domains) and 5,000 sentences unrelated to gender equality. Similarly, for national pride themes, we manually annotate 500 sentences containing national pride narratives (e.g., phrases such as "glory for the motherland," "national honor," and discussions of athletic achievements elevating China's international standing) and 5,000 sentences unrelated to national pride. These manually labeled datasets serve as our training samples.

For classification, we employ a supervised learning approach by fine-tuning a pre-trained RoBERTa model, a transformer-based language model from the BERT family. We train separate binary classifiers—one for national pride and one for gender equality—using an 80/20 train-validation split. Given the class imbalance in our training data (with non-related samples outnumbering related ones by approximately ten-to-one), we incorporate Focal Loss during training to assign higher weights to misclassified instances, effectively mitigating this imbalance. The Focal Loss function is particularly effective in addressing class imbalance by down-weighting easy examples and focusing learning on hard misclassified cases. The models demonstrate strong performance on

Table A13. *Keyword Sets for Classification*

Gender Equality Keywords	National Pride Keywords
Heroine	Strive for national glory
Outstanding woman	National honor
Resounding rose	National pride
March 8th Red Banner holder	Promote Chinese culture
Women of the new era	Live up to the motherland
Strong woman	National strength
Female general	National image
Exceptional woman	National spirit
Exemplary woman	National integrity
Female pioneer	National cohesion
Women's backbone	Repay the nation
Women's representative	Serve the nation
Women's army	Political responsibility
Advanced women's group	Historic breakthrough
Intellectual woman	
Female intellectual	
Gender equality	
Respect women	
Care for women	
Guarantee women's rights	
Protect women's interests	
Safeguard women	
Cultivate women	
Oppose arranged marriage	
Eliminate male preference	
Hold up for half sky	

Notes: This table presents the keyword sets used for constructing the training sample for classification of People's Daily articles into gender equality and national pride themes. The left column lists gender equality keywords and The right column lists national pride keywords. See Appendix D for detailed methodology.

the validation set: the national pride classifier achieves F1-scores of 0.96 for national pride-related sentences and 0.99 for non-national pride sentences, while the gender equality classifier achieves an F1-score above 0.96.

After training, the classifiers label every sentence in the full corpus of 91,507 sentences. An article is classified as national pride- or gender equality-related if it contains at least one corresponding sentence. This procedure identifies 2,348 national pride-related sentences across 1,304 articles and 1,963 gender equality-related sentences across 1,070 articles.

E. Complementary Evidence of Broader Attitudinal Change

In this section, we examine whether exposure to female Olympic success generates broader shifts in gender attitudes across society. We analyze data from the Chinese General Social Survey (CGSS) 2010, which contains comprehensive measures of gender attitudes across multiple dimensions. The survey asks respondents to indicate their agreement with five key statements on a 5-point scale (ranging from "strongly disagree" to "strongly agree"): (1) "Men should focus on career, women on family," (2) "Men are naturally stronger than women," (3) "Women are better to marry well than achieve well," (4) "During economic downturns, women should be laid off first," and (5) "Household duties should be shared equally between spouses." These questions capture distinct facets of gender ideology—from beliefs about natural gender differences in ability to views on appropriate gender roles in family and labor market contexts. Additionally, the survey asks about fertility preferences, specifically whether respondents prefer sons or daughters if they could choose their child's gender, providing a direct measure of son preference that has deep cultural roots in Chinese society.

Based on these survey questions, we construct six indicators reflecting gender attitudes. For the first five measures, we construct dummy variables based on agreement with the above statements, defining the variable as 1 when respondents choose "somewhat agree" or "strongly agree," and 0 otherwise. The sixth indicator measures whether respondents prefer daughters when choosing their child's gender. To examine how exposure to hometown female Olympic medalists affects these gender attitudes, we employ the same specification as in Equation (1) with the six gender attitude metrics as outcome variables.

Table A14 presents the results, providing compelling evidence that female Olympic success fundamentally reshapes gender differences in beliefs about gender roles. Most notably, females exposed to female medalists are significantly less likely than males to endorse traditional gender stereotypes regarding career and family responsibilities (columns (1) and (5)), demonstrating a substantial shift toward more egalitarian views of gender roles in professional and domestic spheres. While the other three attitude measures are not statistically significant (columns (2), (3), and (4)), their coefficients are consistently negative and economically meaningful relative to their sample means, aligning with our predictions.

Furthermore, exposure to female medalists significantly increases preferences for having daughters, directly challenging the traditional Chinese cultural preference for sons (column (6)). These attitudinal changes provide direct evidence that female Olympic success transforms deep-seated gender beliefs that subsequently influence educational and occupational outcomes.

Table A14. *Changes in Gender Attitudes*

	Dependent Variable:					
	Career	Capacity	Marriage	Layoff	Housework	Daughter
	(1)	(2)	(3)	(4)	(5)	(6)
Female × Medal Cohort	-0.0756**	-0.0202	-0.000548	-0.00974	0.0948**	0.0572**
	(0.0303)	(0.0245)	(0.0175)	(0.00957)	(0.0408)	(0.0271)
Controls	Y	Y	Y	Y	Y	Y
HomePref×BirthYear	Y	Y	Y	Y	Y	Y
Female×Post-Mao	Y	Y	Y	Y	Y	Y
Mean	0.60	0.39	0.43	0.11	0.73	0.88
N	5,173	5,163	5,163	5,144	5,174	5,190
R^2	0.341	0.298	0.271	0.247	0.311	0.269

Notes: This table examines the effect of exposure to hometown female Olympic medalists on gender attitudes using data from the Chinese General Social Survey (CGSS) 2010. The dependent variables are binary indicators based on whether respondents strongly agree with the following statements: "Men should focus on career, women on family" (column (1)), "Men are naturally stronger than women" (column (2)), "Women are better to marry well than achieve well" (column (3)), "During economic downturns, women should be laid off first" (column (4)), "Household duties should be shared equally between spouses" (column (5)), and preference for daughters when choosing child's gender (column (6)). All specifications include prefecture-by-birth year fixed effects and the Female × Post-Mao interaction term. Control variables include ethnicity, hukou type, and migration status. Standard errors in parentheses clustered at prefecture level; * p<0.1, ** p<0.05, *** p<0.01.