The Transmission of Son Preference*

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Abstract

This paper studies how cultures diffuse across groups and persist over time. I exploit the quasi-random settlement of Chinese migrants in Taiwan following the Kuomintang Retreat and the 1985 Legalization of Abortion to identify the transmission of son preference. Variation in exposure to ancestor worship captures variation in migrants' son preference. I show that son preference diffuses from migrants to locals and persists through paternal lineage and migrant communities. Horizontal transmission accounts for a larger aggregate impact, whereas vertical transmission exhibits a stronger marginal effect. The results highlight the central role of social interactions, beyond families, in shaping cultural change.

Keywords: Cultural Transmission, Gender, Migration, Son Preference.

JEL codes: J13, J16, N35, Z10.

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1 Introduction

Around the world, cultures often favour or discriminate against certain groups, leading to ignorance, exclusion, and sometimes violence. Understanding how such preferences persist and are transmitted is crucial. Taking the perspective of cultural transmission, this study investigates how son preference diffuses and persists, a phenomenon that contributes to millions of missing women annually.

Cultural barriers can hinder the improvement of gender equality (Jayachandran, 2015), yet culture itself is shaped by geography, institutions, and many other socioeconomic factors. Identifying the transmission of gender norms would require taking a group of people from the current society, randomly assigning them to another society, and examining their behavioral outcomes or those of their descendants; which is impossible to do in either field or lab experiments. This study aims to dissect son preference culture by exploring cultural transmission from complex social environments across social groups and across generations (Bisin and Verdier, 2023). By analyzing a unique mass migration in human history, Kuomingtang (KMT) Retreat to Taiwan, I isolate son preference culture from institutions and uncover three simultaneous ways of transmission: from migrants to locals, through paternal lineage, and within migrants' communities.

The KMT retreat provides an ideal setting for three reasons. First, son preference varied widely among migrants from different mainland provinces. Second, pre-1945 Taiwan was relatively homogeneous in culture and institutions. Third, migrants were forced to leave China and assigned in Taiwan determined by KMT, leaving little room for cultural self-selection or subsequent relocation. About one million people, roughly 15 percent of Taiwan's population in the early 1950s, were relocated. Although many migrant soldiers lived in camps, other migrants interacted

with locals on a daily basis. Over time, the share of migrants declined as fertility was lower among migrants.[1]

To measure migrants' son preference, I use ancestor worship, a cultural practice in which only men perform rites to memorize their (paternal) ancestors. In this tradition, the absence of a son jeopardizes the afterlife of parents, motivating a preference for male offspring. [2] I digitized local festival records from 2,467 county gazetteers and construct the share of local festival days of ancestor worship out of the total days with festivals. This measure captures the regional variation of ancestor worship across mainland China. When migrants settled in Taiwan, they brought these beliefs and practices with them.

The random assignment of migrants in terms of culture is crucial for identifying the horizontal transmission of son preference. To show that the allocation of migrants across towns is unrelated to their culture or the culture of the locals, I collect serveral historical data from the 1920-1956 Taiwan Census and other data sources. I find that both the fraction of males aged 0-10 in 1920 and local ancestor worship measured in 1926 are unrelated to the ancestor worship brought by Chinese migrants after KMT Retreat. I also document the balance across towns with different ancestor worship (migrants) for other historical variables, such as fraction of males, population density, and fraction of Japanese; and fraction of migrants and fraction of males of migrants. These balance tests support the assumption that migrants' cultural traits were randomly assigned across towns.

The impact of culture and beliefs on real-world outcomes depends on the avail-

[1]Many scholars studied the impacts of KMT Retreat by looking at the oversupply of males of the first generation migrants on female bargaining power (Francis, 2011), entrepreneurship (Chang and Zhang, 2015), and female mortality (Chang, Kan and Zhang, 2024).

[2]There are some pieces of survey evidence that ancestor worship practices strongly and positively correlate with individuals' son preference in mainland China (Li and Lavely, 2003; Murphy, Tao and Lu, 2011; Hu and Tian, 2018).

able means. During the mid-1980s, increasing demand for safe abortions led Taiwanese lawmakers to legalize abortion for women to induce an abortion up to the 24^{th} week of pregnancy. The 1985 Legalization of Abortion and ultrasound technology combined to create an efficient and legal method for parents to choose the sex of their children at birth. Hence, it is easy to expect that areas with stronger son preference will have a more male-biased sex ratio after 1985.

Next, I show the effect of ancestor worship (migrants) on missing women and test for horizontal transmission from migrants to locals. The empirical strategy is based on a demographic regularity: the sex ratio of the first two births is biologically normal but becomes abnormally male-biased at the third and higher order of birth (Lin and Luoh, 2008). I find that, after 1985, one standard deviation (s.d) increase in ancestor worship (migrants) raises the probability that local Taiwanese parents have a male child at the third and higher birth orders by 0.58 percentage points (p.p.). Prior to 1985, I do not see trends in this sex ratio. The effect is stronger for local parents who did not have a son in the first two births.

These results are robust to different empirical specifications, alternative measures of ancestor worship, and to controls for a large number of confounders and competing cultures. Child mortality does not appear to drive the estimates and ancestor worship (migrants) does not affect the sex ratio at the first two births. I also find that ancestor worship (migrants) shapes fertility: parents with no son among the first two births are 20 p.p. more likely to have a third birth, and this response is significantly amplified by ancestor worship (migrants).

To enrich the analysis and to shed light on mechanisms, I conduct heterogeneity analysis. Motivated by theories of cultural transmission, I examine whether horizontal transmission varies with migrant presence and with locals' cultural proximity to mainland China. I find that the effect is larger in towns with a higher migrant share

and are substantially stronger where locals are culturally closer to migrants, proxied by shorter distances to historical Confucian schools and higher foot-binding rates in 1920.

To explore the persistence of son preference, I mirror the epidemiological approach introduced by Fernández (2011) to identify the vertical transmission within the migrant family (hereafter family heritage channel). The epidemiological approach compares second-generation migrants whose parents were born in different places in mainland China and thus experienced different levels of ancestor worship, but who now live in the same places in Taiwan and therefore face similar social and local institutional constraints when making decisions. I find that among second-generation migrant fathers, one s.d. increase in their ancestor worship is associated with a 5.55 p.p. increase in the probability of having boys in the 3+ birth order after 1985, which is about eight times larger than the previous horizontal transmission in the margin. In contrast, the effect of mothers' ancestor worship is relatively small and insignificant, suggesting cultural transmission is through the beneficiary (male) group. This family heritage channel is larger than the previous horizontal transmission from migrants to locals.

I also investigate a novel horizontal transmission within migrant communities by testing the average ancestor worship of neighbors from different origins on the second-generation migrant parents' sex selection. The marginal effect of one s.d. change in neighbors' ancestor worship is about 0.8 times of the previous family heritage channel. The effect is stronger when the fraction of migrants from other origins is larger, which suggests that the size of groups matters for persisting cultures.

These findings are related to three main bodies of literature. First, My study is in line with a sizable literature on missing women. Many studies have shown that with the spread of ultrasound technology, sex selection sharply increases on the

higher order of birth in Mainland China, India, Korea, and Taiwan (Arnold, Kishor and Roy, 2002; Chen, Li and Meng, 2013; Lin, Liu and Qian, 2014). Qian (2008) identifies the income effect of mother in relieving missing girls and improve girls' education attainment. Almond, Li and Zhang (2019) finds that, once parents earn more income, they are more likely to have a boy if they did not have one, because they can afford the expensive medical test fees of diagnostic ultrasound. Abrevaya (2009) shows the son preference is persistent, where China-born and Indian-born mothers are more likely to have boys at birth when they live in U.S., a country without a son preference culture. Xue (2016) examines the impacts of cotton revolution in ancient China generated more egalitarian beliefs about women's capabilities.

Second, by identifying the contemporary effect of ancestor worship, I contribute to a broad literature on how historical legacy shapes the current comparative economic conditions (Acemoglu, Johnson and Robinson, 2005). Various studies show that historical shocks alter the economic conditions of women in subsequent generations. Grosjean and Khattar (2019) shows that the male-biased sex ratio in eighteenth-century Australia due to the arrival of a large number of British male convicts, had adverse long-run consequences for female labor force participation and gender norms. Michalopoulos, Putterman and Weil (2019) shows that pre-modern agricultural participation in Africa still influences current individuals' beliefs and economic outcomes. Teso (2019) finds that the lack of male labor force generated by the transatlantic slave trade induced current higher female labor force participation. In Alesina, Giuliano and Nunn (2013), they find that half of the impact of plough use in agricultural society on contemporaneous attitudes to gender roles is due to the vertical transmission of culture from ancestors to descendants rather than any other institutional changes. Besides, Michalopoulos and Xue (2021) launches a dataset of oral traditions for over 1,000 societies, which allows researchers to study the effects

of history legacy broadly. By constructing a series of cultural measures and adopting a systematic cultural transmission approach, I show that cultural distance, lineage, and community are key for the transmission of son preference. This implies a crucial aspect for analyzing the roles of individuals in generating historical and cultural persistence.

This study also contributes to a series of growing literature that decomposes how cultures emerge and persist over time (Giuliano and Nunn, 2021). Relatedly, Shiue and Keller (2024) shows a large historical shock can permanently shift elite families' investment toward more portable skills, with the resulting change transmitted within families over time. Studies in horizontal transmission examine how people's behaviors and attitudes are triggered or diffused by culture from external or internal migrants (Clingingsmith, Khwaja and Kremer, 2009; Giuliano and Tabellini, 2020; Miho, Jarotschkin and Zhuravskaya, 2024). Many studies in vertical cultural transmission employ the epidemiological approach concluded by Fernández (2011). The persistence of fertility culture and female working culture is well documented (Blau, Kahn and Papps, 2011; Fernández and Fogli, 2006; Gay, 2023). Recently, Aneja, Farina and Xu (2025) shows that a wartime labor shock shifted gender norms through both inter-generational transmission and local diffusion. As migration is typically self-selected, estimates of cultural transmission are often confounded by endogenous sorting. The quasi-random settlement of nearly one million Chinese migrants during the KMT Retreat provides plausibly exogenous cultural exposure, enabling the first within-setting comparison of horizontal and vertical transmission.

The remainder of this paper is organized as follows. Section 2 briefly introduces the historical background of ancestor worship and migration in Taiwan after WWII. Section 3 describes the data for empirical usage. Section 4 shows the random variants of ancestor worship (migrants) and transmission from migrants to locals.

Section 5 discusses family heritage channel and transmission within migrant communities. Section 6 presents that ancestor worship (migrants) reshapes individuals' beliefs in Taiwan. Finally, Section 7 draws a conclusion for this study.

2 Historical Background

Taiwan is shaped by waves of migration and complex interactions between indigenous practices and imported norms (especially from mainland China and Taiwan). Two forces are central to this study: ancestor worship and KMT Retreat.

2.1 Ancestor Worship

2.1.1 Ancestor Worship in Mainland China

China has a long history of son preference. Son preference can be traced back to the origins of ancestor worship in the third millennium B.C. Ancestor worship emphasizes both the influence of deceased relatives on the living and the influence of the living on the welfare of the deceased soul. The living who do not practice ancestor worship will suffer misfortune and lose family and friends. One's afterlife will be uncertain without male descendants, and s/he will end up as a hungry ghost. Males who share the same patrilineal ancestors and bear their family practice their ancestor worship together in festivals or major days of their family clan to "feed" their ancestors. The communal practices include offering sacrifices to the ancestors, burning joss paper, and sweeping ancestors' graves. When people care more about their ancestors, there is no doubt that they will have more ancestor worship practices.

The practice of ancestor worship is not only about venerating the deceased rel-

atives, but it also requires family bequests, such as bearing sons to carry the family name and taking care of the elderly of the family (Twitchett, Fairbank and Feuerwerker, 1978). Males are the majority to carry family names to the next generation and be added to the family genealogy. In ancient China, when women married, their names were replaced by their husbands' names. Also, men and their wives are mainly responsible for the duty of taking care of elders in the men's families. Women play a little role in caring for their own parents, but after they are married, they care for their husbands' parents. Daughters, therefore, were not only considered culturally inferior, they were also perceived by most families as a net economic and emotional loss.[3] Today, even though women can keep their original family names when they marry and have the duty of support to their own parents, that is the long-term care channel of son preference is weakened; their offspring still carry on their husband's family name.[4] Ancestor worship still influences parents' gender selection mainly through the importance of patrilineal family continuation. Ancestor worship can be seen as an important cultural feature of son preference.

After 1949, the founding of the People's Republic of China, ancestor worship was severely damaged in mainland China. Especially, during the Cultural Revolution, ancestor worship was regarded as an "Old Custom". The practice of ancestor worship was strictly forbidden and thousands of ancestral halls were destroyed during this period. After the Cultural Revolution, ancestor worship was gradually revived. Two of the traditional national festivals related to ancestor worship, Chinese New Year's Eve and Tomb Sweeping Festival, were designated as official festivals by the

[3]The common saying that "a married daughter is like water spilled on the ground" — one you cannot retrieve.

[4]According to the Chinese Names Report: 2020, only 1 out of 13 newborns in 2020 will carry their mothers' surname, others carry their fathers' surname. http://www.gov.cn/fuwu/2021-02/08/content_5585906.htm, last access: 20/09/2021.

central government. Nowadays, the practices of ancestor worship still widely exist in mainland China; there are 182 million Chinese adults who embrace ancestor worship practices and beliefs (Yang and Hu, 2012).

2.1.2 Ancestor Worship and Confucianism

Many scholars suggest that ancestor worship in China is related to Confucianism (Baker, 1979; Yang, 1967; Zhuo, 2012). Therefore, it is not surprising that the many moral requirements in Confucianism are similar to those of ancestor worship. Although Confucius himself did not express his views on the subject of the afterlife, he did emphasize the importance of sacrificing ancestors "as if present" and maintaining patrilineal family continuity. Jia and Kung (2025) also discusses the relationship between Confucianism and gender inequality in China.

The Confucian scholars share similar attitudes towards patrilineal family continuity and ancestor worship. Mencius, a well-known Confucian philosopher, emphasized the importance of having sons, stating that "There are three things which are 'unfilial', and to have no posterity is the greatest of them". The term "posterity" is usually interpreted as sons, as they will be the primary labor force for families in the future and they can continue the patrilineal family line. Where "posterity" is interpreted similarly in ancestor worship.[5] Furthermore, the presence of son preference in Confucianism is evident in the three cardinal guides and the three obediences for women.[6] It is important to note that these guides and obediences

[5] An analysis by Baker (1979) in discussing ancestor worship for the living: "The living individual knew that he had a continued existence after death only if he could ensure his own posterity. Hence, the desire for a 'hundred sons and a thousand grandsons' may be seen to be a very understandable one".

[6] The three cardinal guides are: ruler guides subject, father guides son, and husband guides wife. The three obediences for a woman: she is required to obey her father before marriage, her husband during married life, and her sons in widowhood.

reflect the patriarchal nature of Confucianism. Ancestor worship, which was also influenced by Confucianism, underwent significant evolution as a result. It is clear that Confucianism had a significant impact on these cultural practices.

2.1.3 Ancestor Worship in Taiwan

Due to the fact that most of the local Taiwanese are originally from two provinces of mainland China – Fujian and Guangdong; ancestor worship was wildly practiced in Taiwanese society.[7] Following the First Sino-Japanese War in 1895, Taiwan was colonized by Japan until 1945. During this period, the colonial government restricted the practice of ancestor worship in order to promote Shinto, the Japanese national religion. Ancestor worship was considered as a "vulgar culture" and many ancestor tablets were burned in a series of cultural campaigns (Tsai, 1991). As a result of forced assimilation, Taiwanese people replaced ancestor tablets with *Jingu Taima* at home and participated in Shinto activities rather than ancestor worship practices.[8]

After World War II, the forced assimilation ended with the departure of the Japanese colonizers. Migrants from mainland China revived the ancestor worship of local Taiwanese and transmitted ancestor worship from all over mainland China, not just from Fujian and Guangdong only. According to Yang and Hu (2012), 87.4% of adults in Taiwan are ancestor worshippers. Cultural transmission by migrants from mainland China after World War II may have played an important role in the emergence of ancestor worship in Taiwan.

[7] People who or whose ancestors lived in Taiwan before 1945 are clarified as local Taiwanese.

[8] There are no precise statistics available regarding the prevalence of ancestor worship or Shinto in history. According to the *Taiwan Governor-General's Archives*, in 1944, 71% of Taiwanese were able to speak Japanese, which suggests that forced assimilation was effective.

2.2 Chinese Migrants in Taiwan

2.2.1 Three Major Waves of Migrants in Taiwan

There have been three major waves of migrants to Taiwan since the 17th century. The first wave is Taiwan under Qing rule (1683-1895). Many peasants from Fujian and Guangdong migrated to Taiwan to work in agriculture. Today, over 95% of local Taiwanese are descendants of first-wave migrants.[9] The second wave is Taiwan under Japanese colonial rule (1895-1945). During this period, migrants from mainland China are strictly restricted and controlled. Most of the migrants are from Japan and Korea, making up about 7% of the total population. After World War II, with the surrender of Japan, most of the Japanese and Koreans leave Taiwan. The third wave is due to the 1945-54 KMT Retreat to Taiwan. The KMT brings over one million migrants from mainland China to Taiwan within 10 years. The one million migrants represent about 15% of the total population in Taiwan. They are the focus of this research.

2.2.2 The KMT Retreat

Immediately after the end of World War II, the KMT and the Chinese Communist Party fought a civil war from 1945 to 1949. The former was defeated and retreated to Taiwan. Various studies have suggested that the number of civil war migrants to Taiwan is around one million, while the local population of Taiwan in the 1950s was only 6 million (Barclay, 1954; Jacoby, 1966; Lin, 2002). After 1954, the last retreat of the KMT army in Thailand and Myanmar, there was virtually no immigration to or emigration from the island.

After the migrants arrived on the island, they were assigned to places based on

[9]The remaining 5% of local Taiwanese are indigenous peoples.

their occupations or the occupations of their relatives. Many migrants are soldiers, government administrators, or their relatives; their settlements are determined by the KMT. The distribution of migrants may have been guided by KMT's ideas of reforming both economic and political institutions. Military dependents' villages and their neighborhoods are important places for migrants to live. Although many migrants were free to choose their residents after their initial settlement, there was little movement. With the outbreak of the Korean War in 1950, many migrants believed they would soon return back to China with the help of the American army, and paid little attention to their residents in Taiwan (Lin, 2009).

2.2.3 Cultural Transmission between Locals and Migrants

In the 1950s, many local Taiwanese could not speak Mandarin Chinese, but they could speak some dialects of Fujian and Guangdong. Because of the language barriers, first-generation migrants have more social interactions with other migrants than local Taiwanese. The historical documents suggest the importance of language and culture similarity in the son preference transmission. But for the second-generation migrants, there is no clear separation between them and their local cohorts, as both of them study and work together, which creates the opportunity for the transmission of ancestor worship from migrants to locals.

Consistent with the historical narrative, Figure 1 documents that migrants consistently exhibit a higher fraction of males among aged 0–4 children than locals. Over time, however, locals exhibit a rising male share among children aged 0–4, gradually converging toward the migrant level after the KMT Retreat. This descriptive convergence is consistent with increased inter-group contact as language barriers weakened.

3 Data

3.1 Ancestor Worship in China

Ancestor worship practices are common in ancient China. To construct a proxy for ancestor worship prevalence, I digitized the local festivals from 2,467 county gazetteers which were published in the 1980s.[10] I treat the festival practices involving the contents of tombs and ancestors as ancestor worship practices. The construction of the ancestor worship density at the county level is as follows:

$$AW\_Density_c = \frac{\#\ of\ days\ of\ ancestor\ worship\ practices}{total\ days\ of\ local\ festivals}$$

As shown in Figure 2, AW_{Density} exhibits substantial regional variation across mainland China, with higher prevalence in the South. While the historical determinants of ancestor worship are complex and not fully settled in the literature, scholars widely recognize that ancestor worship emphasizes lineage continuity through male descendants. Consistent with this interpretation, Figure A.1 validates AW_{Density} as a proxy for son preference: it is positively correlated with sex ratio among young children and with survey-based measures of patrilineal and son-prefering norms.

3.2 Ancestor Worship in Taiwan

To construct the town-level ancestor worship introduced by Chinese migrants after 1945, I collected the geographic distribution of migrants' origins in each town

[10] Many local festivals have the same name but the practices associated with them vary widely by region. For example, within Fujian Province, people in Fuqing County sacrifice deceased ancestors on the winter solstice, but people in Wuping County only make rice wine on the same festival.

from the 1956 Taiwan Census. There are 48 origins in the province level in mainland China and 354 towns in Taiwan. Accordingly, I can construct the ancestor worship (migrants) as follows:

$$AW\_Migrants_a = \frac{\sum_{a,p}(Migrant_{a,p} * AW\_Density_p)}{Migrant_{a,p}}$$

where $Migrant_{a,p}$ is the number of migrants from province p in mainland China living in town a in Taiwan, $AW\_Density_p$ is the ancestor worship density of the province.[11] Figure 3 shows the geographic distribution of ancestor worship (migrants). There is no clear geographic distribution pattern in the map.

Since over 95% of local Taiwanese are originally from mainland China, they might bring their ancestor worship and other pre-1945 cultures to Taiwan. I construct ancestor worship (locals) to represent the local ancestor worship. *Investigation of Han Ancestral Home in Taiwan*, a survey conducted by Ogawa Naoyoshi in 1926, documents the origins of local Taiwanese from 10 prefectures in China and their corresponding residents at the town level of Taiwan.[12] The construction process of ancestor worship (locals) is similar to the previous equation:

$$AW\_Locals_a = \frac{\sum_{a,d}(Local_{a,d} * AW\_Density_d)}{Local_{a,d}}$$

where $Local_{a,d}$ is the number of locals originally from prefecture d in mainland China and live at town a in 1926 Taiwan. $AW\_Density$ is ancestor worship density at the prefecture level.

Figure 4 shows the map of ancestor worship (locals). It is clear to see that

[11] I aggregate the original ancestor worship density from the county level to the province level in mainland China.

[12] The ten prefectures are Quanzhou, Zhangzhou, Tingzhou, Longyan, Fuzhou, Xinghua, and Yongchun in Fujian Province; and Chaozhou, Jiaying, and Huizhou in Guangdong Province.

western areas have higher ancestor worship (locals). The distribution pattern is strongly influenced by geographic characteristics. The western plain areas are close to mainland China and suitable for cultivation, but the central and eastern areas are mountainous and have few Chinese locals. Most of the residents in the central and eastern areas are indigenous Taiwanese who do not have an ancestor worship culture.

3.3 Taiwan Population Census

1980 and 1990 Censuses. The universe micro-samples of the 1980 and 1990 censuses naturally avoid measurement bias due to stratification. The two samples include about 18 million and 20 million individuals. Figure A.2 shows the trend of the fraction of males by birthyear from the 1980 and 1990 censuses. The fraction of males is higher than the biological normal fraction of males at birth (51 p.p.) in 90% of the birth cohorts except 1957-1960. It shows a persistent but mild male-biased sex ratio pattern in Taiwan.[13] Figure A.2 further motivates my focus on the cultural transmission of ancestor worship: since the fertility policy environment is stable in 1970-84 Taiwan, the fraction of males gradually increased with birthyear, the trend could be attributed to the gradual cultural transmission of ancestor worship. And the sharp increase in fraction of males after 1985 is consistent with sharp increase in share of abortion after 1985 ploted in Figure 5.[14]

In the 1990 census, I match the parents and children based on their family relationships and construct the birth order based on the age of their children. Figure

[13]Infanticide of female children was widespread in ancient China including Taiwan (Chen, 1989; Lee, Feng and Campbell, 1994). The Taiwanese have apparently not practiced infanticide since the twentieth century (Lee, 1981). However, parents may neglect their daughters or allocate more resources to sons given the son preference, so that the fraction of males is higher than the biological normal.

[14]Share of abortion is constructed from 1986 Knowledge, Attitudes, and Practice of Contraception (KAP), the only survey with abortion statistics in individidual-pregnancy level in the 1980s.

6 shows the trend of the fraction of males from the 1990 census. I compare the data pattern with Lin, Liu and Qian (2014) which uses Taiwan's National Birth Registries presented in Figure A.3. Both figures show that sex selection after the Legalization of Abortion is concentrated in the third and higher order of birth.

The 1990 census also provides rich information about individual identities which helps identify different channels of cultural transmission. Based on the Taiwan government, an individual who is regarded as a *migrant* should satisfy two standards: (1) His paternal family is originally from mainland China. (2) He or his paternal ancestor should have arrived in Taiwan after 1945. Otherwise, he is a *local* Taiwanese.[15]

1920 - 1956 Censuses. To construct explanatory variables and some historical controls, I digitize the 1920, 1930, 1940, and 1956 Taiwan censuses. From 1920, 1930, and 1940 censuses, I extract information on ethnic distribution, the fraction of males, and population density. The 1956 census records the residence of migrants at the town level with their origin at the province level in mainland China. It also includes other migrant characteristics such as the migrant rate and the fraction of males among migrants.

3.4 Other Controls

In this section, I list the data sources for the set of covariates used in the empirical analysis. I control for factors that may be correlated with son preference.

Proxies for Confucianism. I constructed two historical variables, Confucian scholars (*jinshi*) density and Confucian clan density, to capture the influence of Confucianism.[16] The information on Confucian scholars comes from the China Bio-

[15] For example, former Taiwanese leader Tsai Ing-wen is a local Taiwanese, even though her paternal ancestor was from Mainland China, and arrived in Taiwan before 1945.

[16] *Jinshi* are the people who pass national-level bureaucratic examinations. Most of the political elites in ancient China have the title of *jisnshi* .

graphical Database Project created by Harvard University.[17] Confucian clan data is from Comprehensive Catalogue of Chinese Genealogies created by Yuhua Wang.[18]. Historical population data is extracted from Ge (2000). With the three data from different sources together, I can construct the Confucian scholars density and the Confucian clan density in ancient China.

Geographic Characteristics. I collected a broad set of geographic characteristics. I use these variables to test the exogeneity of ancestor worship (migrants) and as controls in regressions. Data on the soil suitability index of wheat, wet rice, maize, white potato, cotton, and tea are from FAO GAEZ (v4.0).[19] I also constructed the logarithmic distance to Taipei (capital of Taiwan) and the logarithmic distance to the seashore based on the GIS data of the Taiwan administrative map.[20]

Family Characteristics. I include a number of family characteristics to control for the family heterogeneity in sex selection. The controls include the years of schooling of the parents, the age of parents at the birth of the child, and the birth order.

I report the summary statistics of town level characteristics in Table A.1 and the individual characteristics from the 1990 census in Table A.2.

4 Cultural Transmission from Migrants to Locals

In this section, I first present the main specifications of horizontal cultural transmission, discuss identification assumptions, and present estimation results.

[17] link:https://projects.iq.harvard.edu/cbdb/home. Last access: 05/08/2022.
[18] link:https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/P0OVF6. Last access: 05/08/2022.
[19] link:https://gaez.fao.org/. Last access: 23/01/2022.
[20] link:https://data.gov.tw/dataset/7441. Last access: 23/01/2022.

4.1 Empirical Strategy

To examine the impact of ancestor worship (migrants) on the sex ratio. I implement a Difference-in-Differences empirical strategy on the sex of children aged 0-9 in the third and higher birth order in the 1990 census:

$$\begin{aligned} Male_{ifat} =& \alpha + \beta AW\_Migrants_a \times Post_t + \boldsymbol{\omega} \boldsymbol{X_a'} \times Post_t \\ &+ \boldsymbol{\phi} \boldsymbol{X_f'} \times Post_t + \lambda_a + \theta_{ct} + \epsilon_{ifat} \end{aligned} \tag{1}$$

where $Male_{ifat}$ is indexed as one if the child i is born at year t in family f of town a is male, otherwise is zero, $Post_t$ equals one if the child is born after 1985 (including 1985). $\boldsymbol{X_f'}$ is a matrix of family characteristics including years of schooling of parents, the age of parents at childbirth, and the birth order of child. λ_a and θ_{ct} are town fixed effects and county-birthyear fixed effects which capture all of the unobserved town-specific variants and county-year specific shocks. Standard errors are all clustered at the town level.

4.2 Identification Assumptions

The main identification assumption to establish the causal effects of ancestor worship (migrants) is that the destination choices of migrants with different cultures are not affected by local culture and gender norms. In other words, ancestor worship (migrants) should be orthogonal to all observed and unobserved determinants of local son preference. Both the historical narrative and the regression analysis presented below provide strong support for this assumption.

I address the identification challenge in three ways: (1) by presenting the trend of the fraction of males for local Taiwanese in 1920-1956 by the three groups of towns

with low, medium, and high levels of ancestor worship (migrants) in 1956; (2) by regressing ancestor worship (migrants) on a number of cultural and demographic characteristics before 1945, as well as some migrant characteristics and geographic characteristics; (3) by reporting a balance test of the estimation of historical characteristics with ancestor worship (migrants).

In addition, I show that the size of people who migrated to Taiwan is strongly related to the total population and population density in their origins. Both total population of home province and population density of home province jointly explains 68.9% of variance in migrant population in Table A.4. However, migrant population does not correlate with the ancestor worship or other historical controls in migrants' home province. These evidences support the argument that the migrants are not self-selective or affected by their original cultures, as they were forcely sent to Taiwan by strict military and political orders.

4.2.1 Historical Narratives

The assignment of migrants to their destination was designed by KMT and guided by the idea of total control over Taiwan, e.g. healthy and strong migrant men were assigned to military service or manual force, and educated individuals were sent to teach Mandarin Chinese. Since Taiwan was under martial law from 1949 to 1987, both the occupation and the destination of migrants were determined by KMT authority. Historians also argue that under the propaganda of KMT and the beginning of the Korean War, migrants generally believed that the American army would soon help them retake mainland China; most of them did not care about the residents.

The local population was relatively homogeneous within counties before 1945.

In 1940, 5% of the population are Japanese concentrated in the urban or suburban areas in the western plain of Taiwan.[21] 91% of the population are originally from Guangdong and Fujian provinces of mainland China. They also concentrate in the western plain of Taiwan. The rest are indigenous people who live in the eastern mountainous area. This homogeneity makes it implausible that migrants from different origins would have different preferences for different towns within counties. This premise is supported by the following balance tests.

4.2.2 Balance Tests

First, in Figure A.4, I show the relative trends of the fraction of males for local Taiwanese across three groups that experienced high, medium, and low ancestor worship (migrants). Towns with different levels of ancestor worship (migrants) have little different trends in the fraction of males in the pre-KMT Retreat period. This suggests that ancestor worship (migrants) has little correlation with the changes in local gender norms prior to the KMT Retreat.

To see whether the destination choice of migrants from different origins is least correlated with local son preference, I regress ancestor worship (migrants) on a set of historical characteristics in culture and demography, as well as geographic characteristics; and report the estimates in Table 1. In the first two columns, I find no predictive power of the pre-period son preference behavior, the fraction of males aged 0-10 in 1920. By adding a set of observable historical and geographic characteristics in columns 3 and 4, it is hard to see any observables with strong predictive power on ancestor worship (migrants). Moreover, all controls can only explain 6.6% of the variance in ancestor worship (migrants). The analysis supports the assumption that

[21] However, due to the defeat of World War II, most of the Japanese left Taiwan after 1945.

most of the variance in ancestor worship (migrants) is orthogonal to many gender-related local characteristics.

Conversely, I conduct a balance test by regressing various town level characteristics that might affect son preference on ancestor worship (migrants). Figure 7 shows the estimates for this exercise. The estimates suggest that, conditional on the county fixed effects and geographic characteristics, towns that happen to have higher ancestor worship (migrants) are generally not significantly different from counties that have lower ancestor worship (migrants). These results provide additional support for treating ancestor worship (migrants) as exogenous to local son preference.

4.3 Results

From now on, let us focus on 3+ birth order children and examine the possible channels of cultural transmission of son preference. I first check the horizontal transmission from migrants to locals by looking at the sex selection of local parents who were both born after 1954, the end of KMT Retreat. Table 2 presents the results from estimating Specification 1. The difference-in-differences specification allows the probability of having a son at each birth to follow different trends over time in each town following their historical and geographic characteristics. In column 1, I include town fixed effects and county-birthyear fixed effects to account for the sex selection effect of town-specific trends and time-varying shocks across counties. In column 2, I control for the historical legacies that may affect both ancestor worship (migrants) and sex selection, e.g. two proxies for the local gender norm: fraction of males aged 0-10 in 1920 and fraction of males in 1940. The interaction of these variables with the Legalization of Abortion captures the possibility that parents in more historically conservative towns may have been on a different trajectory with respect to

sex selection. Similarly, in column 3, I include geographic characteristics interacting with the Legalization of Abortion. Despite the limited self-selection of migrants, the distribution of migrants is determined by KMT to meet the needs of land reform in the 1950s. Thus, this specification accounts for the possibility that sex selection followed different trends in different towns with different needs of local society and land reform for migrants. Finally, in column 4, I add the child's birth order, ages of parents at child's birth, and years of schooling of parents; which interacts with the Legalization of Abortion. This flexibly accounts for the heterogeneity of family backgrounds and women's biological capacities that could affect parents' sex selection behavior before and after the Legalization of Abortion.

The estimates of interest are stable across different specifications. The estimates in columns 1-4 show that one s.d. (0.018) increase in ancestor worship (migrants) leads to 0.58 p.p. increase in the probability of having a male, or approximately 300 excess males every year. This accounts for about 6% of the excess males after 1985.

A reasonable hypothesis is that the magnitude of the effects depends on the sex composition of the previous births. As ancestor worship emphasizes the importance of having at least one son, parents without a son in the first two births are incentivized to have a son in the following birth. Indeed, I find a larger and highly significant effect among 3+ births whose parents do not have a son in the first two births in column 5. Among parents who already have son(s), the estimated effect is smaller but statistically significant in column 6. The heterogeneous response by the sex composition of the first two births suggests that the incentive of parents is a plausible channel through which ancestor worship (migrants) increases the probability of having a son.

4.4 Robustness Check

In this section, I report estimates from a series of exercises that I perform to assess the robustness of the estimated results.

Parallel Trend Assumption. As discussed above, ancestor worship (migrants) correlates little with the trend of sex selection before 1945. However, sex selection could be salient due to a series of family planning policies that were introduced in Taiwan in the 1950s. The parallel trend assumption could be violated if the family planning policies changed both the sex selection trend and the son preference. To test this assumption, I reproduce the estimate in column 4 of Table 2 by allowing the effects of ancestor worship (migrants) to vary by children's birthyear. Figure 8 shows the event study that there is little pre-trend difference before the Legalization of Abortion. The dynamic effects of ancestor worship (migrants) are positive and persistent by birthyear after 1984.

Selection in the First Two Births. Although prior studies argue that sex selection is largely absent at the first two birth orders, it remains important to verify that this pattern holds in this study. The robustness test in the Figure A.5 shows no clear evidence of sex selection driven by ancestor worship (migrants) in the first two births. Estimated effects on the probability of having a male birth fluctuate around zero across birthyear, and all corresponding confidence intervals include zero. Descriptively, the lack of a clear time pattern suggests that first two births are not influenced by active prenatal sex selection

Heterogeneous Child Mortality across Ages. An important concern for the baseline results is that heterogeneous child mortality, rather than differential selection at birth, may drive the baseline effects. If boys and girls faced systematically different survival probabilities across cohorts, especially at young ages, observed sex

ratios in later data could mechanically reflect mortality differences. While such a channel is theoretically possible, it would require large and cohort-specific sex differences in child survival. To assess this possibility, I exploit the 1980 census and re-estimate the event study for children born between 1971 and 1980. Figure A.6 shows no systematic differences in boys' survival across cohorts associated with exposure to ancestor worship (migrants), and all estimates are statistically indistinguishable from zero. These patterns suggest that selective child mortality is unlikely to explain the baseline results.

Alternative Specifications. I re-run baseline specification with several variants and report them in Table A.5. In column 1, I cluster the standard errors at the county level with 21 clusters. The standard errors change little and the coefficient of interest remains statistically significant at the 1 percent level. In column 2, I cluster standard errors over two dimensions, as suggested in Cameron, Gelbach and Miller (2011): at town and county-birthyear level. Similar to column 1, the coefficient of interest remains statistically significant at the 1 percent level.

In column 3, I eliminate the heterogeneity in family culture by adding the parents' origin-birthyear fixed effects. The estimated coefficient of interest remains quantitatively unchanged and statistically significant at the 1 percent level. To validate that the interpretations of the empirical results are not sensitive to the choice of policy time, I change *Post* to 0 for the 1985 cohort and report the estimate in column 4. The estimate decreases by 0.06 units and the standard error increases somewhat, but the coefficient of interest remains statistically significant at the 1 percent level. In columns 5 and 6, estimates are robust to the choice of regression models. The estimates from Logit model and Probit model are both statistically significant at the 1 percent level. Besides, the marginal coefficients of Logit and Probit model evaluated at the mean of the covariates are similar to OLS coefficients in Table 2.

Alternative Measures. The choice of aggregation methods of ancestor worship density from county level to province level in mainland China may damage the estimates of interest. In the main analysis, I use ancestor worship density at the province level, which is the average of the county level data to construct ancestor worship (migrants). Ancestor worship density in mainland China will be biased if the number of Chinese migrants differs across counties within a province. Then, ancestor worship (migrants) in Taiwan would also be biased. Alternatively, I use the county population from the 1953 China Population Census and the county area to proxy the number of Chinese migrants from each town within each province. I then construct the province level ancestor worship density with county level population and area weights and construct two alternative ancestor worship (migrants). Another concern might be the representative of ancestor worship density. The effects of ancestor worship could be biased if the number of local festivals (other than ancestor worship) is correlated with the local son preference. Therefore, I use the number of ancestor worship festivals with and without weights as alternative measures of ancestor worship in mainland China.

Table A.6 shows the correlation of original ancestor worship (migrants) with alternative measures of migrants' ancestor worship. It is easy to see that the original ancestor worship (migrants) is positively and significantly correlated with the alternative measures. Moreover, the measure of ancestor worship (migrants) is highly consistent through weights. The adjusted R-squared in columns 1 and 2 suggests that over 90% of the variance of ancestor worship is unchangeable by weighted methods. Although adjusted R-squared drops in columns 3-5, the lowest adjusted R-squared is 0.235 in column 5. Overall, the estimates in the table collectively support that original ancestor worship (migrants) is an appropriate measure of ancestor worship.

In Table A.7, I replace the original ancestor worship (migrants) with the above

alternative measures in Specification 2. For comparability across variables, we report the standardized coefficients in square brackets. The estimates are consistent in columns 1-3 and columns 4-6. Compared to columns 4-6, the lower standardized coefficients in columns 1-3 suggest that the estimated effect of ancestor worship (migrants) is a lower bound of the ancestor worship culture in the analysis.

Contents of County Gazetteers. A potential concern is the ancestor worship measure proxies for broader features of county gazetteers. In particular, it may capture overall local cultural activity, rather than ancestor worship per se. Table A.8 addresses this concern by conducting a horse racing test: I replicate the baseline specification while replacing ancestor worship (migrants) with measures of other festival categories recorded in the same gazetteers (religious, marketplace, and agricultural festivals). These placebo measures do not predict son preference and do not replicate the baseline magnitude. When all festival measures are included jointly, the estimated effect of ancestor worship (migrants) remains large and statistically significant. The estimates suggest that the main results reflect norm-specific content rather than broader gazetteer characteristics.

Alternative Cultures. In addition to ancestor worship, other cultures may also be transmitted and affect Taiwanese son preference. If these cultures are correlated with ancestor worship, previous estimates will be biased. To validate the effect of ancestor worship, I conduct a horse racing test with three types of alternative cultures: Confucian culture (clan and confucian scholars), tea culture, and rice verse wheat culture. Table A.9 shows that some alternative cultures may have effects on sex selection, but do not damage the effect of ancestor worship (migrants).

4.5 Parents' Fertility Decisions

This section examines the relationship between the sex composition of the first two births and the fertility choice for the third birth. The sample is comprised of parents who have at least two births. Overall, I find parents who have fewer sons in the first two borns are more likely to continue fertility, while ancestor worship (migrants) amplifies this effect. In columns 1 and 2 of Table 3, I estimate the effect of having no son in the first two births on having a third birth with and without town fixed effects and parents' birth fixed effects. The results indicate that without any son in the first two births, parents are 20 p.p. more likely to have the third birth. The effect persists in column 3 with adding parents' years of schooling. In columns 1-3, it is easy to see that parents who have only one son in the first two births are 5-6 p.p. likely to continue fertility than parents who have two sons. The two estimates jointly rule out the possible explanation of parents' mixed sibling-sex composition preference in fertility and suggest the fertility decision is driven by son preference.

To empirically test the roles of son preference in fertility, in column 4, I interact having no son in the first two births with ancestor worship (migrants). The estimate of having no son in the first two births drops from 0.20 to 0.07, yet remains statistically significant. The estimate of the interaction term is positive and significant, suggesting that over a 60 percent increase in giving a third birth is through the mechanism of ancestor worship (migrants). Therefore, to some extent, son preference amplifies the extensive margin of fertility.

4.6 Mechanisms: Migrant Share and Cultural Distance

The behavior of the locals can be affected by the culture of migrants for several reasons. Bisin and Verdier (2011) emphasizes cultural transmission is expected to be higher when the benefits of adopting the culture are high or the costs of adoption are low. The costs of adopting another culture are lower when there are more individuals with another culture around or when groups are culturally closer, both of which increase the possibility of contact and communication across groups. It is reasonable to hypothesize that the share of migrants and cultural distance can affect the cultural transmission.[22]

To assess the cultural distance of the local society to Chinese migrants before the KMT Retreat, I employ two distinct cultural variables: the distance to Confucian schools and the foot-binding rate in 1920. The use of these two variables offers two primary advantages. First, the recognition and similarity. Many Confucian scholars espouse ancestor worship. Similarly, the practice of ancestor worship has been shown to have a detrimental impact on daughters, as it emphasizes the importance of sons. Foot binding, on the other hand, has been identified as a practice that harms women, particularly in terms of its role in fostering a culture of female beauty competitiveness and marital prosperity (Fan and Wu, 2023). Second, Confucian schools and foot-binding were prohibited throughout much of the period before 1945. Most Confucian schools were banned and replaced by Japanese schools after 1895. Since 1915, women have been prohibited from binding their feet except for elders.

I estimate the heterogeneous effects of ancestor worship (migrants) by applying Specification 1 to different subsamples separated by town level of migrant share in

[22] Miho, Jarotschkin and Zhuravskaya (2024) highlights that the size of migrants relative to locals promotes horizontal cultural transmission. Spolaore and Wacziarg (2022) and Beach and Hanlon (2023) together show that cultural transmission is more effective in groups who have a closer cultural distance.

1956, the distance to Confucian schools in 1895, and foot-binding rate in 1920. The results are shown in Table A.10. Every subsample contains 177 towns which are separated by the median fraction of migrants, median distance to Confucian schools, or the median foot-binding rate. The difference between estimates in columns 1 and 2 suggest where horizontal cultural transmission is stronger in towns with a higher fraction of migrants. However, the difference in the estimated coefficients are insignificant between columns 1 and 2. It is easy to see that the estimates are significant at the 1% level and larger in towns that are closer to Confucian schools or with higher foot-binding rates in columns 3 and 6. Conversely, the effects of ancestor worship (migrants) are smaller and insignificant at the 10% level in columns 4 and 5. The differences in the estimates between columns 3 and 4, and between columns 5 and 6 jointly suggest the horizontal transmission strongly relies on the cultural distance in local society.

5 Cultural Transmissions within Migrants

In this section, I identify the cultural transmission within migrant groups, I focus on the second-generation migrants and consider both vertical transmission within migrant families (family heritage channel) and horizontal transmission within migrant communities (community channel).

5.1 Epidemiological Approach

I use empirical strategies that mirror the epidemiological approach to cultural transmission proposed by Fernández (2011). Given that the relationship between inherited beliefs and behaviors may be co-determined by institutional factors and the socioeconomic environment, this approach identifies cultural transmission through

the behaviors of individuals with different places of origin but who grow up and live in the same environment and thus face similar constraints in their decision-making.

Ancestor worship is a cultural feature of son preference, which has a dispreference for girls in Chinese history. The dispreference for girls may materialize girls and treat girls as a kind of "collateral" such as bride price. If the collateral effect persists, the incentive structure faced by parents would be systematically different in places with different son preferences. That ancestor worship culture is mixed with the local marriage market. To identify the portable component of son preference and disentangle cultural transmission from confounding institutional factors, I exploit variations in the sex selection among migrant parents who make decisions under similar local conditions but whose places of origin differ and whose migrant neighbors differ in their exposure to ancestor worship.

5.2 Family Heritage Channel

In the 1990 census, the origin of an individual's patrilineal origin. Thus, the family heritage of ancestor worship identified by the epidemiological approach originates from the paternal line. I first explore the role of fathers' origins by looking at the second-generation migrant fathers. The empirical specification is as follows:

$$\begin{aligned} Male_{i,j,a,t} =& \beta AW\_Density_j \times Post_t + \boldsymbol{\omega_1} \boldsymbol{X_j'} \times Post_t \\ &+ \boldsymbol{\omega_2} \boldsymbol{X_f'} \times Post_t + \sigma_j + \lambda_{k,t} + \delta_{a,t} + \epsilon_{i,j,a,t} \end{aligned} \tag{2}$$

Where $AW\_Density$ is the ancestor worship culture of father j from his Chinese origin. $\boldsymbol{X_j'}$ contains historical controls from the father's origins: Confucian scholar density, Confucian clan density, and suitability index of tea, wet rice, and wheat. $\boldsymbol{X_f'}$ is a matrix of family controls containing the parents' years of schooling, age at

birth of the child, birth order, and whether parents are from the same origin. σ_j and $\lambda_{k,t}$ are fathers' origin fixed effects and mothers' origin-birthyear fixed effects which can absorb unobserved effects from the fathers' origin and control for the potential channel of mothers' original culture. $\delta_{a,t}$ is town-birthyear fixed effects to absorb time-variant shock at the town level including the impact of horizontal cultural transmission estimated in Section 4. Standard errors are all two-way clustered at the fathers' origin level and resident town level.

In Table 4, I report the results for the family heritage channel of fathers. In columns 1-3, the sample is the children of second-generation fathers. The coefficient of interest in column 3 is 1.79 and is statistically significant at the 5 percent level. It implies that migrant fathers with one s.d. (0.031) higher ancestor worship will be 5.55 p.p. more likely to have a boy when prenatal sex selection is available. The migrant fathers' family heritage channel is about eight times larger than the horizontal cultural transmission from migrants to locals in Section 4.

In column 5, I replicate column 4 estimation by restricting the sample to both parents who are migrants. The resulting estimate is larger and statistically significant at the 5 percent level. The assortative marriage in culture seems to have some impacts on the family heritage channel. Given that about 40 percent of intermarriage in this sample and fertility is jointly determined by parents, the local mothers probably deny the need for a son from the migrant fathers, making the impact of fathers' origins less influential.

Next, I reproduce the above analysis with the mother's ancestor worship from her origin. The estimates in Table A.11 are all negative, but on small scales and not significant at the 10 percent level. The family heritage channel has no clear effect on second-generation migrant mothers. This suggests that only the group of people, who benefit from the unequal culture, men, have incentives to adopt and transmit

the ancestor worship.

5.3 Community Channel

When the first-generation migrants moved to Taiwan, most of them settled down in the military dependents' villages which were composed of migrants from different places. Living in military dependents' villages creates opportunities for migrants to socialize and transmit cultures. Combining the feature of migrant communities with the theory raised by Panebianco and Verdier (2017), which emphasizes the importance of social networks in cultural transmission. I examine the horizontal transmission within migrant networks (community channel).

I construct a variable indicating that migrants are influenced by their migrant neighbors from other origins within the migrant community. The variable is similar to the previous ancestor worship (migrants) but captures the variation at the origin-residential town level. The variable is constructed:

$$AW\_Neighbors_{pi,a} = \frac{\sum_{a,p\neq pi}(Migrant_{a,p\neq pi} * AW\_Density_{p\neq pi})}{Migrant_{a,p\neq pi}}$$

where the migrant from origin pi is influenced by the culture of other migrants from other origins $p \neq pi$ within the migrant community of town a in Taiwan.

The estimation function is similar to Specification 2 and to estimate the horizontal cultural transmission within the migrant community, where I pool the migrant fathers of different origins in the same town:

$$Male_{i,j,a,t} = \alpha + \beta AW\_Neighbors_{j,pi,a} \times Post_t + \boldsymbol{\omega_2 X_f'} \times Post_y + \phi_{f,t} + \delta_{a,t} + \epsilon_{i,j,a,t} \quad (3)$$

Where $\phi_{f,t}$ absorbs parents' origin-birthyear fixed effects, in which the family heritage channel of ancestor worship is absorbed. Standard errors are all three-way clustered in the fathers' origin and resident town level. β is identified from variations in the sex selection of migrant fathers from the same origin, but surrounded by migrant neighbors from different origins. I also show that the effect of β is mainly driven by the relative size of the migrant community, proxied by the fraction of migrants from other origins.

I identify the community channel with the sample that parents are both migrants and fathers are second-generation migrants. The estimates in columns 1 and 2 of Table 5 imply that migrant fathers living in the migrant community surrounded by neighbors with one s.d. (0.006) higher ancestor worship will be 4.57 p.p. more likely to have a boy when prenatal sex selection is available. This is about 0.8 times the family heritage channel. After rescaling the coefficient to account for the group size of migrants with different origins, the magnitude is about 8.8 percent of the coefficient of column 4 in Table 4.[23] The estimate in column 3 suggests that the effect of the community channel is driven by the possibility of interacting with migrants from other origins. In other words, one p.p. increase in the fraction of migrants from other origins will generate about a 4.1 percent increase in the effect of the community channel.

I reproduce the above analysis for mothers. The estimates in Table A.12 are all on a smaller scale and not significant at the 10 percent level. The community channel of mothers is imprecise. Similar to the family heritage channel above, the horizontal

[23]On average, the group size of migrants with different origins in a town is 36 times the group size of migrants with the same origin. Accordingly, when rescaling the community diffusion channel by the relatively average size of migrants with different origins, the marginal effect of an increase in the population to higher ancestor worship to migrants with different origins is $7.61/36 = 0.21$, which is about 8.8 percent of the increase in the same level of ancestor worship in the family heritage channel.

transmission within the community is insignificant for mothers. The reasons could be either the nature of ancestor worship, which requires the son to worship the paternal-line ancestors so that the mother would be excluded from worshiping after one generation; or the patrilineal culture is not welcomed and disliked by women, so that they have no incentive to accept and transmit the ancestor worship.

5.4 Comparisons across transmission channels

In order to evaluate the findings of this study on male-biased sex selection and contextualize their magnitudes and impacts, I present the estimates from three distinct cultural transmission channels in Table 6. It is challenging to establish a common framework for comparing the estimated effects across cultural transmission channels, as the samples and sources of variants vary considerably. One potential approach is to compare the estimated effects with a change in one residual standard deviation to compute residual magnitudes. In other words, one should rely on the effective variation in the treatment variable used for identification once fixed effects are taken into account. Then, multiply the raw estimates with these residual standard deviations and potential confounders (Mummolo and Peterson, 2018).[24] To facilitate a more comprehensive comparison of the effects of horizontal and vertical transmission, I compare both estimated coefficients and estimated missing girls, while taking into account the varying group sizes across samples.

The initial focus is on the estimated result, which is based on local parents born after 1954. In comparison to the estimates identified by migrant fathers' origin and migrant fathers' origin-residential town, the magnitude of the estimate identified on local parents is found to be lower. It appears that the transmission of ancestor wor-

[24] Gay (2023) applies a similar method with computing standardized estimates to compare different channels of vertical transmission of female working culture.

ship brought by migrants is more likely to occur horizontally and vertically among migrants than from migrants to locals in the margin. When interpreting estimates with residual standard deviation, the estimate identified by the migrant father's origin has the highest margin; which is consistent with findings in numerous studies indicating that vertical transmission is the most important channel in persisting culture. However, horizontal transmission from migrants to locals has the highest estimated impact on missing girls. One residualized standard deviation increase in ancestor worship (migrants) will lead to 1,251 missing girls or 4.2 percent of the total missing girls in 1985-90 Taiwan. The comparison between horizontal and vertical transmission indicates that cultural transmission within lineage contributes is the most significant channel in persistence, whereas horizontal transmission is the most significant channel in diffusion. In total, one s.d. increase in the three cultural transmission channels will result in a joint increase of 1,532 missing girls or 5.1 percent of the total missing girls in 1985-90 Taiwan.

6 Changes in Preferences toward Son and Ancestor

To account for the above results on sex selections, I argue that Chinese migrants altered preferences toward son and ancestor of their children and social relationships. These changes translated into sex selections in subsequent generations. Since individuals form preferences early in life from learning and socializing with their parents, peers, and neighbors (Bisin and Verdier, 2023), people who grew up with gender-biased parents or in an environment with higher son preference, should form conservative attitudes to son and ancestor. To explore the validity of this argument, I analyze the long-run implications of ancestor worship brought by Chinese migrants for attitudes toward son and ancestor.

6.1 Data and Empirical Strategy

Taiwan Social Change Survey 1994 and 1999 proposed three statements related to attitudes toward son and ancestor to respondents, whether they think is 'not important at all', 'not important', 'neutral', 'important', or 'really important'. The statements are (1) 'To carry on the ancestral line, you should have at least one son', (2) 'You should bring honors to your family clan', (3) 'After death, people should be memorized and worshiped by their descendants'. I assign 0 to 'disagree' and 1 to 'agree', and use 0.25-point increments for responses in between, so that higher values indicate more conservative attitudes toward son and ancestor. To ensure respondents have interaction with migrants in their early life, I restrict the sample to people who were born after 1954. The summary statistics of preference on son and ancestor is shown in Table A.3. The subsample of males has higher valuations for son and ancestor than the whole sample.

I test the horizontal transmission by comparing respondents who live in the town with different ancestor worship (migrants) :

$$Y_{ia} = \alpha + \beta AW\_Migrants_a + \boldsymbol{\omega} \boldsymbol{X_a'} + \boldsymbol{\delta} \boldsymbol{X_i'} + \theta_c + \sigma_t + \phi_s + \epsilon_{ia} \tag{4}$$

where Y_{ia} denotes the one-point scale values of interest for respondent i who lives in town a. $\boldsymbol{X_a'}$ is a set of historical controls and geographic characteristics assigned at the town level. I also include a set of individual controls $\boldsymbol{X_i'}$, gender, number of children, marriage, and years of schooling. Besides, three types of fixed effects are included, county fixed effects θ_c, birthyear fixed effects σ_t, and survey fixed effects ϕ_s. I cluster standard errors at the town level. β is identified from variations in attitudes held by respondents of the same cohort but live in towns that experienced

different ancestor worship (migrants).

6.2 Results

I report results in Table 7. The corresponding coefficients toward son preference, ancestor worship, and family honor are separately presented in Panel A, B, and C. With and without controls, the coefficients of interest are all significant at the 1% level or 5% level. Column 1 implies that respondents who live in the towns that experienced one s.d. higher ancestor worship (migrants), hold more conservative attitudes to son preference, ancestor worship, and family honor: the value of interest will be 2.2 pp, 1.3 pp, and 0.8 pp higher; which correspond to 5.2%, 1.8%, and 1.3% of the mean. These effects are robust to adding controls. Thus, exposure to ancestor worship (migrants) translates into more conservative attitudes toward sons and ancestors.

7 Conclusion

Leveraging the unique historical setting of Taiwan, this paper provides the first empirical evidence on identifying and comparing both horizontal and vertical cultural transmission within the same context. Exploiting the quasi-random assignment of migrants during the KMT Retreat and the Legalization of Abortion as a policy shock, I identify the causal effect of ancestor worship on sex selection and son preference. The results demonstrate that cultural norms operate through multiple channels: horizontal transmission from migrants to locals, vertical transmission within the (paternal) lineage, and horizontal transmission within migrant communities.

One s.d. increase in ancestor worship (migrants) explains 4.2 percent of miss-

ing girls through horizontal transmission to locals alone, highlighting that culture is one of the first-order determinants of son preference and gender inequality. Consistent with recent work emphasizing the role of cultural proximity in diffusion, I show that horizontal transmission is stronger when migrants and locals are culturally similar. At the same time, vertical transmission within families is substantially larger in magnitude, in line with theoretical models predicting and many empirical works that inter-generational transmission is the most persistent channel for culture reproduction. I further document a distinct mechanism of transmission within migrant communities and provide suggestive evidence that group size plays a critical role in sustaining and propagating cultural norms.

These findings motivate several directions for future work. A first step is to pin down the micro-foundations of diffusion, how family-based transmission interacts with local social networks, schools, and marriage markets in shaping son preference. Second, the role of migrant group size suggests studying how demographic concentration and residential clustering affect the persistence of cultural traits and the speed of convergence across groups. Finally, applying the same empirical framework to other migration episodes or institutional changes would help assess external validity and clarify when cultural transmission amplifies, attenuates, or reshapes the effects of policy shocks.

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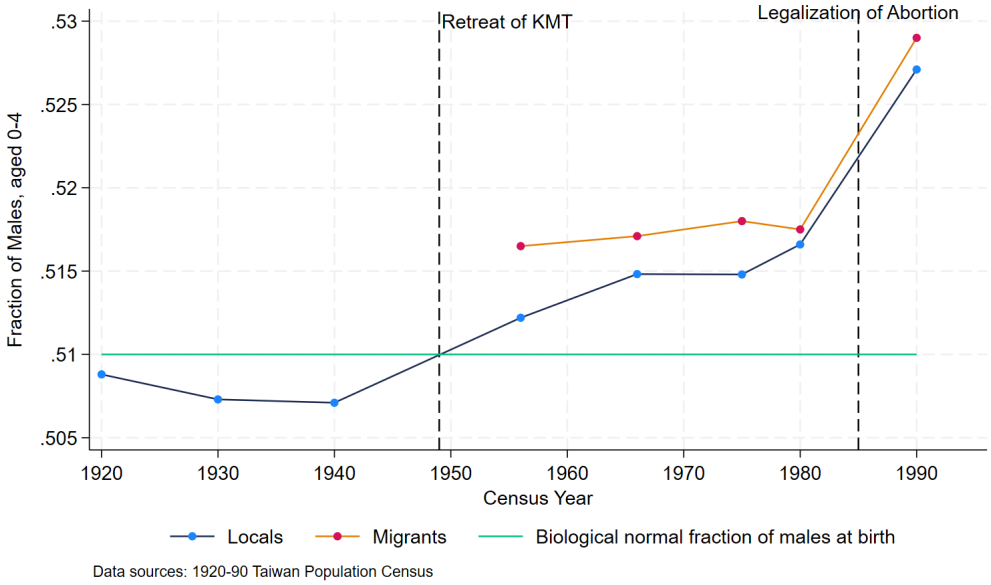
Figures and Tables

Figure 1: Trends of Fraction of Males, aged 0-4



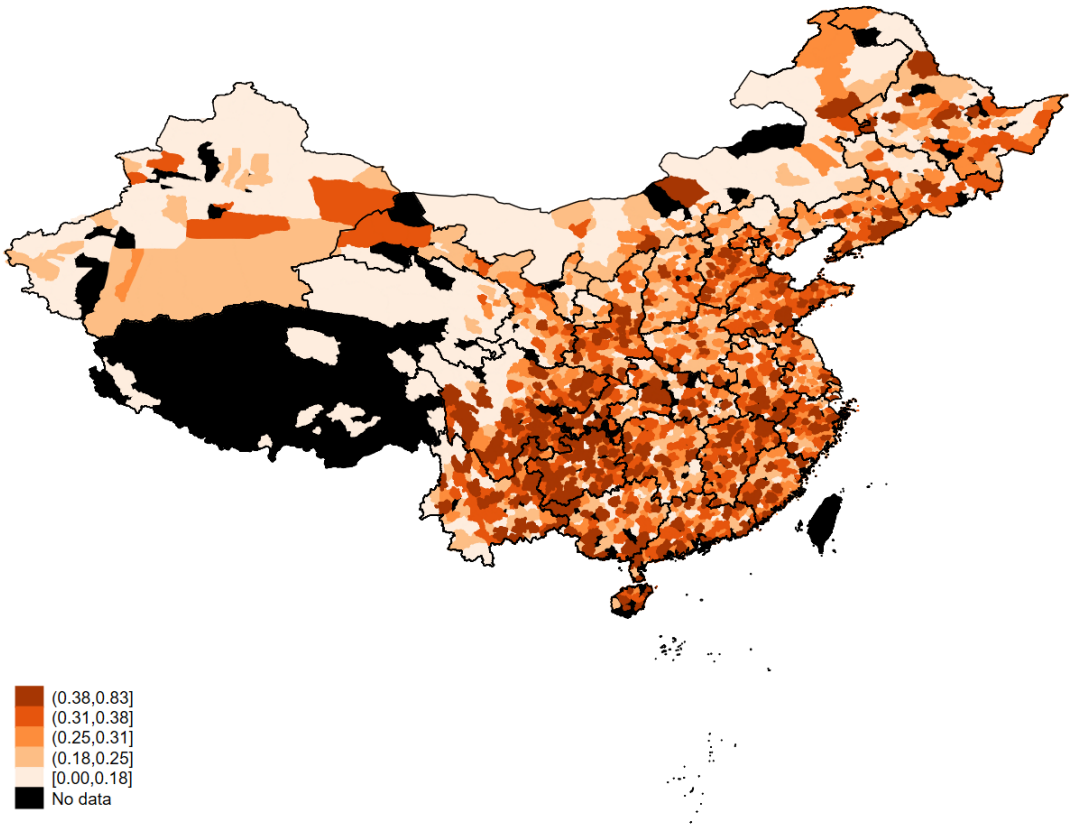


Figure 2: The Map of Ancestor Worship Density in China

Figure 3: The Map of Standardized Ancestor Worship (Migrants)

Figure 4: The Map of Standardized Ancestor Worship (Locals)

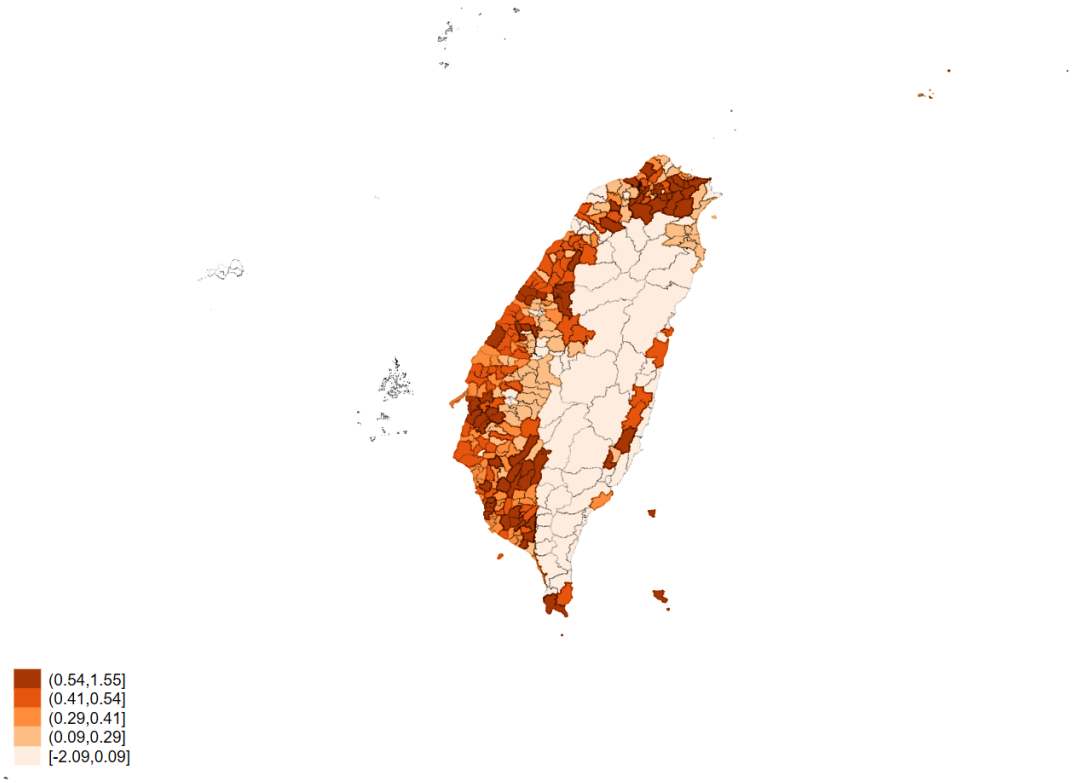
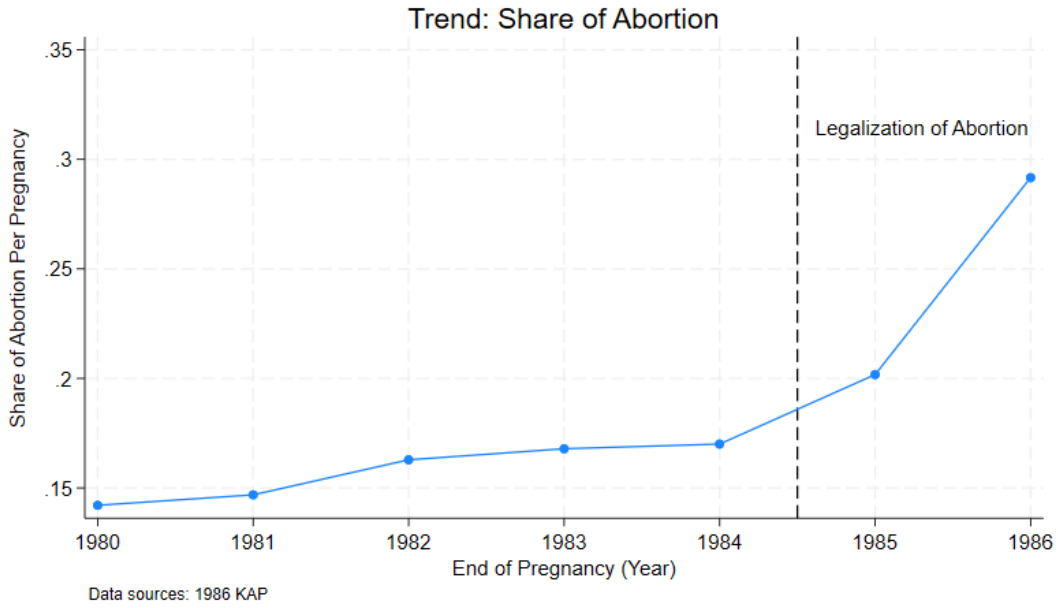
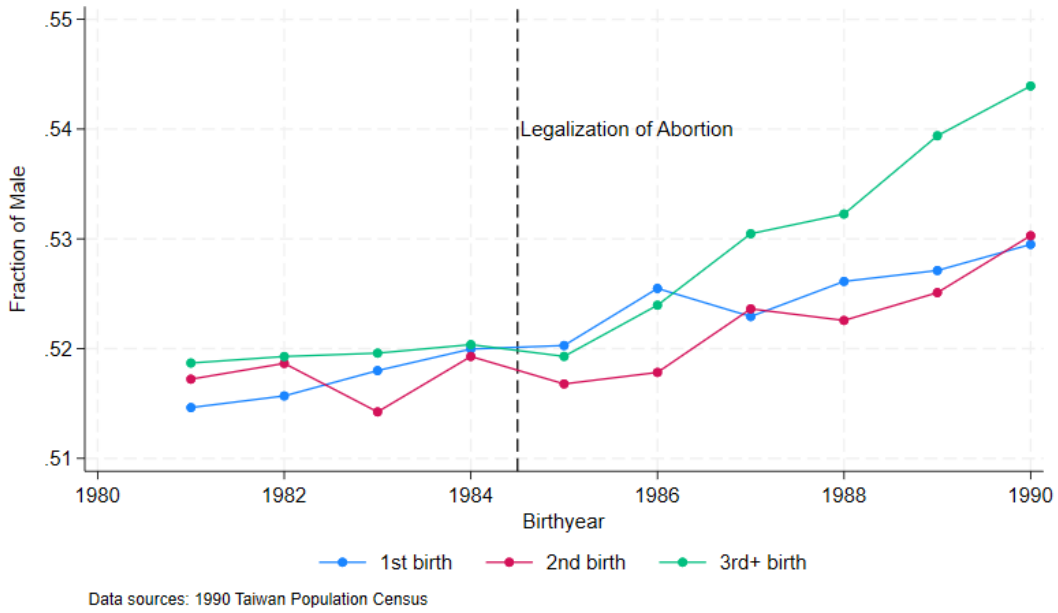


Figure 5: Share of Abortion per Pregnancy (1980-1986)



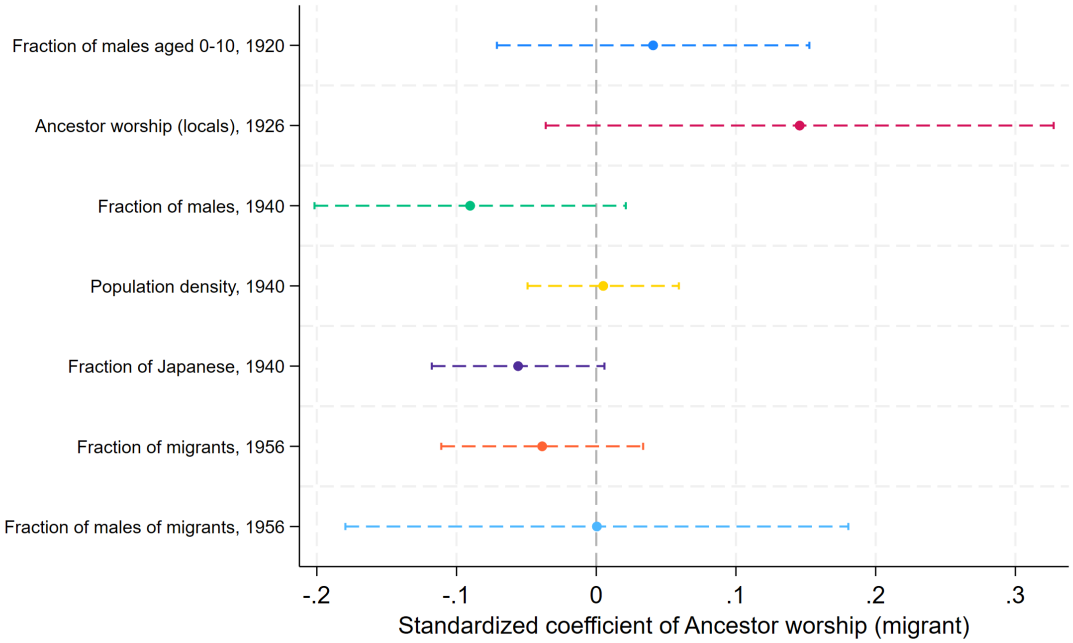
Note: The 1986 KAP is the only survey contains abortion statistics in individual-pregnancy level in the 1980s. It surveys aged 20-49 married women and asked the outcomes of every pregnancy.

Figure 6: Fraction of Male by Birth Order (1981-1990)



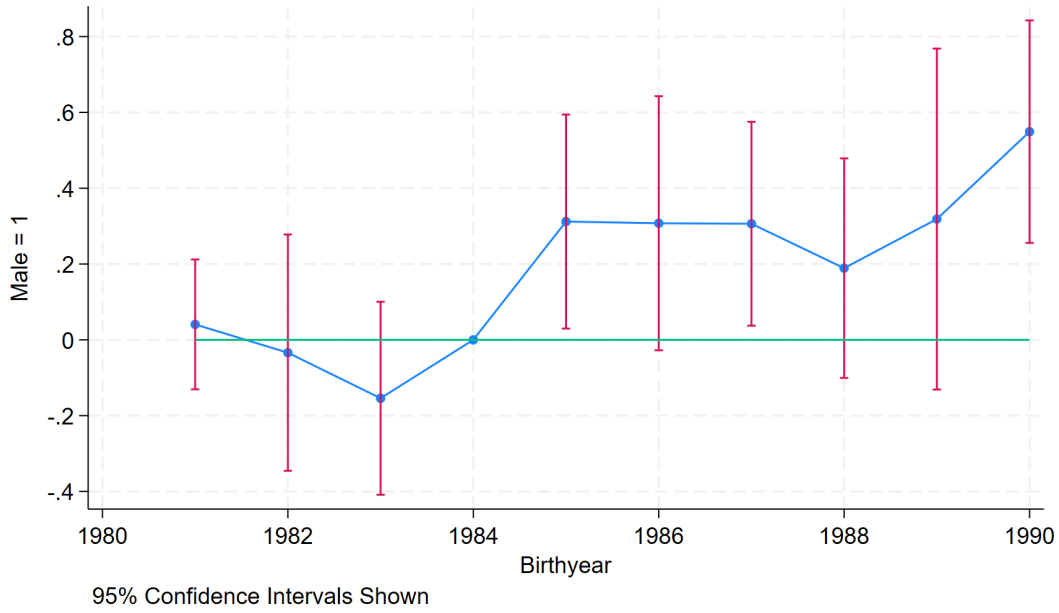
Note: The birth order is constructed based on the family relationship to household leader and birthyear of each children in 1990.

Figure 7: Historical Characteristics and Ancestor Worship (Migrant)



Note: The figure presents the estimated standardized coefficients and respective 95 percent confidence interval from regressing various historical characteristics (denoted on the y-axis) on ancestor worship (migrants) at town level, conditional on county fixed effects.

Figure 8: Event Study of the Ancestor Worship (Migrants) on Male (1981-1990)



Note: The figure presents the event study by estimating an alternative version of Specification (1), which allows the estimators of ancestor worship (migrants) to vary by birthyear and uses the birthyear=1984 cohort as the comparison group. With this, I can examine the trend of estimators before the Legalization of Abortion and the dynamic effects of ancestor worship (migrants) after the Legalization of Abortion.

Table 1: Ancestor Worship (Migrants) and Historical Characteristics

Dependent variable	Ancestor worship (migrants)			
	(1)	(2)	(3)	(4)
Fraction of males aged 0-10 in 1920	0.00	0.04	0.02	0.05
	(0.05)	(0.06)	(0.05)	(0.05)
Ancestor worship (locals) in 1926			0.09	0.08
			(0.09)	(0.10)
Fraction of males in 1940			-0.06	-0.08
			(0.07)	(0.08)
Population density in 1940			-0.02	0.04
			(0.04)	(0.03)
Fraction of Japanese in 1940			-0.03	-0.06
			(0.07)	(0.06)
Fraction of migrants in 1956			-0.10	-0.08
			(0.07)	(0.07)
Fraction of males of migrants in 1956			0.09	0.05
			(0.07)	(0.07)
County FEs	No	Yes	No	Yes
Geographic characteristics	No	No	Yes	Yes
# of Towns	354	354	354	354
Adj. R^2	-0.003	0.043	0.029	0.069

Notes: This table reports standardized coefficients from regressing ancestor worship (migrants) on various demographic characteristics before 1945, migrant characteristics measured in 1956, and geographic characteristics. *Geographic characteristics:* the suitability index of cotton, maize, wet rice, white potato, wheat, and tea; (ln)distance to seashore, (ln)distance to Taipei. Robust standard errors are all clustered at the county level.
*** Significant at the 1 percent level. ** 5 percent level. * 10 percent level.

Table 2: The Effect of Ancestor Worship (Migrants) on 3+ Birth Order Children's Sex

Dependent Variable	Male = 1					
Have boy(s) in 1^{st}&2^{nd} birth	All				No	Yes
	(1)	(2)	(3)	(4)	(5)	(6)
Ancestor worship (migrants) X Post	0.33***	0.34***	0.32***	0.32***	0.39**	0.29**
	(0.09)	(0.08)	(0.08)	(0.08)	(0.18)	(0.12)
County-birthyear FEs	Yes	Yes	Yes	Yes	Yes	Yes
Town FEs	Yes	Yes	Yes	Yes	Yes	Yes
Historical controls X Post	No	Yes	Yes	Yes	Yes	Yes
Geographic characteristics X Post	No	No	Yes	Yes	Yes	Yes
Family controls X Post	No	No	No	Yes	Yes	Yes
# of Towns	354	354	354	354	354	354
# of Observations	358,287	358,287	358,287	358,287	117,230	241,057
Outcome mean	0.527	0.527	0.527	0.527	0.537	0.523
Ancestor worship (migrants) s.d.	0.018	0.018	0.018	0.018	0.018	0.018

Notes: This table reports OLS coefficients from estimating Specification (1) on the sample of 3^{rd}+ birth order aged 0-9 children whose parents are both locals and born after 1954. The results from regressing male indicator on county-birthyear fixed effects, town fixed effects, and a set of historical controls, as well as a series of geographic characteristics and family controls. *Geographic characteristics:* the suitability index of cotton, maize, wet rice, white potato, wheat, and tea; (ln)distance to seashore, (ln)distance to Taipei. *Family controls:* birth order of the child, age of parents at child's birth, and years of schooling of parents. Standard errors are all clustered at the town level.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 3: Children's Sex Composition and Fertility Decisions for Two-child Parents

Dependent variable	Third child = 1			
	(1)	(2)	(3)	(4)
No son in 1^{st}&2^{nd} birth	0.21***	0.20***	0.20***	0.07*
	(0.00)	(0.00)	(0.00)	(0.04)
One son in 1^{st}&2^{nd} birth	0.06***	0.06***	0.05***	-0.03
	(0.00)	(0.00)	(0.00)	(0.03)
No son in 1^{st}&2^{nd} birth				0.43***
X Ancestor worship (migrants)				(0.14)
One son in 1^{st}&2^{nd} birth				0.29***
X Ancestor worship (migrants)				(0.10)
Town FEs	No	Yes	Yes	Yes
Parents' birthyear FEs	No	Yes	Yes	Yes
Parents' education	No	No	Yes	Yes
# of Towns	354	354	354	354
# of Observations	565,324	565,324	565,324	565,324
Outcome mean	0.383	0.383	0.383	0.383

Notes: This table reports OLS coefficients from regressing the discrete choice of having a third child on the indicators of having no son and one son in the 1^{st}&2^{nd} birth and years of schooling of parents with the town and parents' birthyear fixed effects. The sample is the local parents who had at least two children and were both born after 1954. Standard are all clustered at the town level.

*** Significant at the 1 percent level. ** 5 percent level. * 10 percent level.

Table 4: The Effect of Migrant Father's Ancestor Worship on the Sex of 3+ Birth Order Children

Dependent variable	Male = 1			
	(1)	(2)	(3)	(4)
Ancestor worship (father) X Post	1.22*	1.71**	1.79**	2.40**
	(0.69)	(0.79)	(0.79)	(1.07)
Town-birthyear FEs	Yes	Yes	Yes	Yes
Father's origin FEs	Yes	Yes	Yes	Yes
Mother's origin-birthyear FEs	Yes	Yes	Yes	Yes
Origin controls (father) X Post	No	Yes	Yes	Yes
Family controls X Post	No	No	Yes	Yes
# of Father's origin	39	39	39	34
# of Towns	231	231	231	194
# of Observations	10,380	10,380	10,380	6,025
Outcome mean	0.532	0.532	0.532	0.530
Ancestor worship (father) s.d.	0.031	0.031	0.031	0.032

Notes: This table reports coefficients from estimating Specification (2) on the sample of 3^{rd}+ birth order aged 0-9 children whose father is a second-generation migrant in column 1-3. The sample is restricted to parents who are both migrants in column 4. The results from regressing male indicator on town-birthyear fixed effects, father's origin fixed effects, mother's origin-birthyear fixed effects, and origin controls (father) as well as a series of family controls. *Origin controls (father):* Imperial scholars density, Confucian clan density, and suitability index of wheat, wet rice, and tea of father's origin. *Family controls:* birth order of the child, age of parents at child's birth, and years of schooling of parents, as well as whether parents are from the same origin. Standard errors are all clustered at the town level and migrant father's origin level.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 5: The Effect of Ancestor Worship of Migrant Neighbors from Other Origins than Father on the Sex of 3+ Birth Order Children

Dependent variable	Male = 1		
	(1)	(2)	(3)
Ancestor worship (neighbors, father) X Post	7.63**	7.61**	8.62**
	(3.63)	(3.69)	(3.57)
Ancestor worship (neighbors, father) X Post			35.41*
X Fraction of migrants from other origins			(18.96)
Town-birthyear FEs	Yes	Yes	Yes
Parents' origins-birthyear FEs	Yes	Yes	Yes
Family controls X Post	No	Yes	Yes
# of Father's origin	33	33	33
# of Towns	193	193	193
# of Observations	5,976	5,976	5,976
Outcome mean	0.529	0.529	0.529
Ancestor worship (neighbors, father) s.d.	0.006	0.006	0.006

Notes: This table reports coefficients from estimating Specification (3) on the sample of 3^{rd}+ birth order aged 0-9 children whose parents are both migrants and father is a second-generation migrant. The results from regressing male indicator on town-birthyear fixed effects, parents' origins-birthyear fixed effects, and a series of family controls. *Family controls:* birth order of the child, age of parents at child's birth, and years of schooling of parents, as well as whether parents are from the same origin. Standard errors are two-way clustered at the town level and migrant father's origin level.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 6: Estimates' Magnitudes and Estimated Impacts

Analysis	Source of variation	Ancestor worship ↑ one s.d.			Reference
		Raw s.d.	Residual s.d.	Missing girls	
Local parents	town-cohort	0.58 p.p.	0.48 p.p.	1251	Column 4, Table 3
Migrant fathers	father's origin-cohort	5.55 p.p.	2.60 p.p.	217	Column 3, Table 5
Migrant communities	father's origin-town-cohort	4.57 p.p.	1.37 p.p.	64	Column 2, Table 6

Notes: This table reports the main estimates in this research. *Raw s.d.* is the sample standard deviation of the independent variable. *Residual s.d.* is the residualised standard deviation of the independent variable with respect to specification-specific fixed effects and control variables. *Missing girls* is the estimated number of missing girls by one residual s.d. of the independent variables X size of birth in 1985-1990 of the corresponding sample.

Table 7: The Effect of Ancestor Worship (Migrants) on Preferences on Son and Ancestor

	(1)	(2)	(3)	(4)
Panel A: *Son Preference*				
Dependent variable	The importance of having at least one son			
Ancestor worship (migrants)	1.51***	1.19***	1.17***	1.54**
	(0.55)	(0.36)	(0.34)	(0.59)
# of Towns	73	73	73	73
# of Observations	2,263	2,263	2,263	2,263
Panel B: *Ancestor Worship*				
Dependent variable	The importance of being memorized and worshiping after death			
Ancestor worship (migrants)	0.84***	1.13***	1.13***	1.01**
	(0.29)	(0.35)	(0.34)	(0.43)
# of Towns	78	78	78	78
# of Observations	2,315	2,315	2,315	2,315
Panel C: *Family Honor*				
Dependent variable	The importance of bringing honor to your family clan			
Ancestor worship (migrants)	0.51**	0.59**	0.65**	1.33**
	(0.19)	(0.29)	(0.28)	(0.64)
# of Towns	73	73	73	73
# of Observations	2,263	2,263	2,263	2,263
County FEs	No	Yes	Yes	Yes
Birthyear FEs	No	Yes	Yes	Yes
Survey FEs	No	Yes	Yes	Yes
Individual controls	No	No	Yes	Yes
Historical controls	No	No	No	Yes
Geographic characteristics	No	No	No	Yes
Ancestor worship (migrants) s.d.	0.015	0.015	0.015	0.015

Notes: This table reports OLS coefficients from estimating Specification (4) on the sample of respondents born after 1954 in the Taiwan Social Change Survey (1994 & 1999). The results from regressing attitudes of interest on county fixed effects, birthyear fixed effects, survey fixed effects, and a set of historical controls, as well as a series of geographic characteristics and indivudal controls. *Geographic characteristics:* the suitability index of cotton, maize, wet rice, white potato, wheat, and tea; (ln)distance to seashore, (ln)distance to Taipei. *Individual controls:* gender, marriage, number of children, years of schooling. Due to the missing information of survey sample, the number of children and years of schooling are neither controlled in Panel B.
*** Significant at the 1 percent level. ** Significant at the 5 percent level.

A Appendix Figures and Tables

Figure A.1: Correlations between Ancestor Worship and Current Son Preference

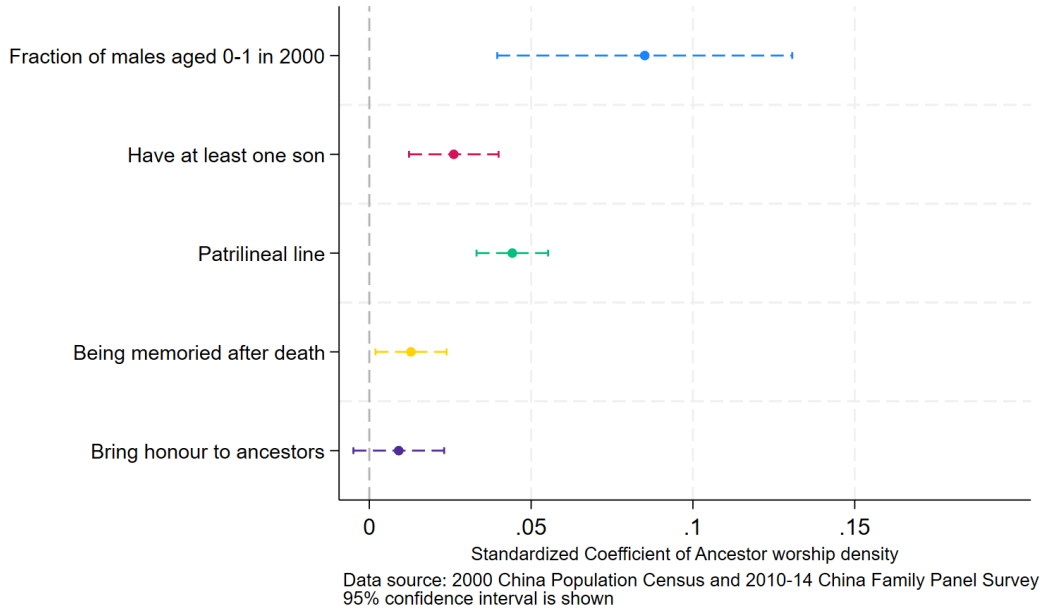


Figure A.2: Fraction of Male in the 1980 and 1990 Censuses

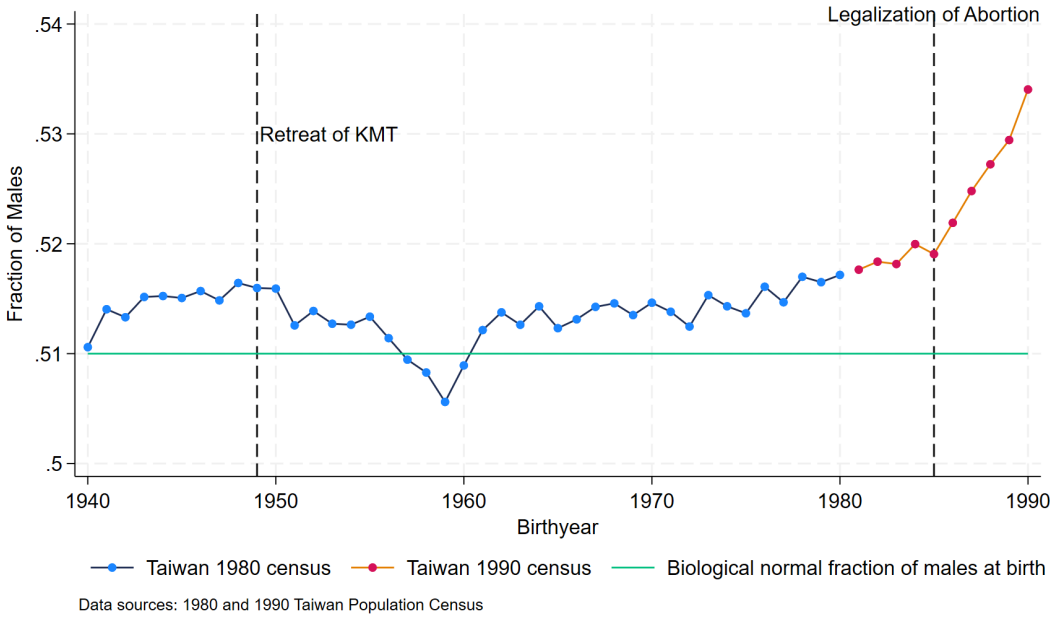
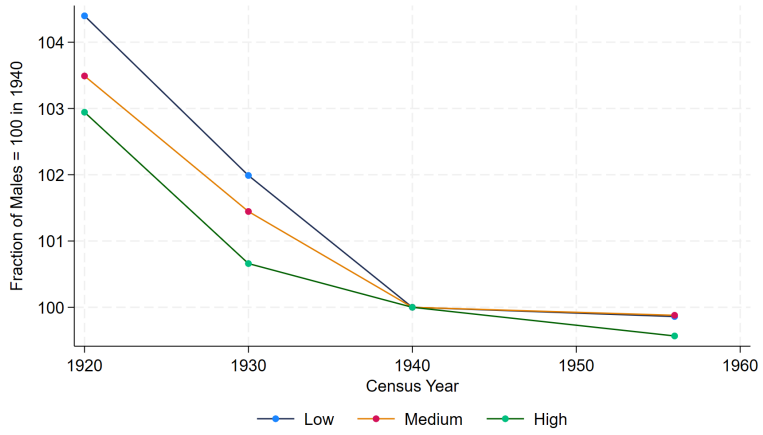
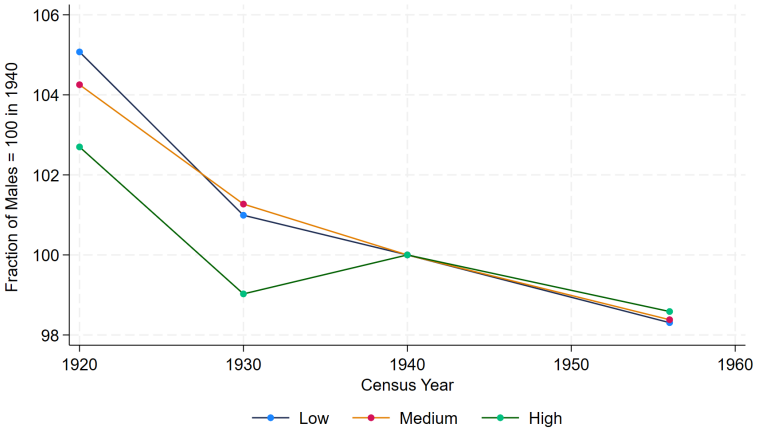


Figure A.3: Fraction of Male of Births by Birth Order (1982-1989) from Lin, Liu and Qian (2014)

Figure A.4: Trends of Fraction of Males in total and of locals (1920-1956)



(a) Fraction of Males



(b) Fraction of Local Males

Note: Relative trends of fraction of males and fraction of local males across groups of 118 towns with high, medium, and low ancestor worship (migrants) in 1920-1956 Taiwan census.

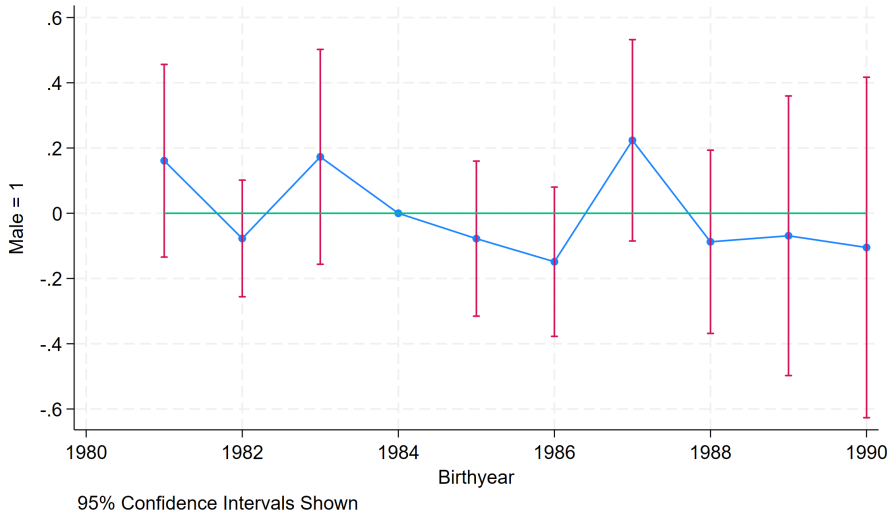


Figure A.5: Event Study for the First Two Birth Order Children (1981-1990)

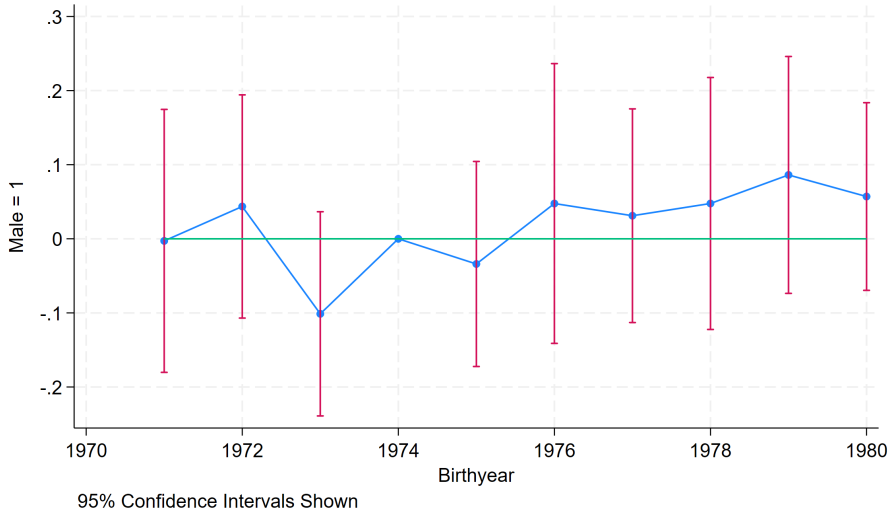


Figure A.6: Placebo Test for Children in 1980 Census (1971-1980)

Table A.1: Summary Statistics of Town Level Characteristics

	Obs.	Mean	SD
Ancestor worship (migrants), 1956	354	0.300	0.0148
Ancestor worship (locals), 1926	354	0.331	0.132
Fraction of males aged 0-10, 1920	354	0.512	0.0143
Fraction of males, 1940	354	0.508	0.0162
Fraction of Japanese, 1940	354	0.0405	0.0625
Population density (per km^2), 1940	354	3164.8	12599.6
Fraction of males of migrants, 1956	354	0.653	0.0975
Fraction of migrants, 1956	354	0.0614	0.0915
Ln cotton suitability	354	6.901	1.955
Ln maize suitability	354	7.277	1.497
Ln tea suitability	354	8.039	1.165
Ln wet rice suitability	354	7.627	1.953
Ln white potato suitability	354	7.157	1.341
Ln wheat suitability	354	7.350	1.404
Ln distance to seashore	354	2.699	0.725
Ln distance to Taipei	354	4.777	1.047

Table A.2: Summary Statistics of Aged 0-9 Children with 3+ Birth Order in 1990 Census

	Obs.	Mean	SD
Male	358,287	0.527	0.499
Birth order	358,287	3.482	0.972
Father's age at child's birth	358,287	28.80	3.121
Father's birthyear	358,287	1958.38	2.962
Father's year of schooling	358,287	8.887	2.665
Mother's age at child's birth	358,287	26.38	3.327
Mother's birthyear	358,287	1960.96	3.417
Mother's year of schooling	358,287	7.938	2.545

Table A.3: Individual Preferences on Son and Ancestor in 1994 and 1999 Taiwan Social Change Survey

	All			Male		
	Obs.	Mean	SD	Obs.	Mean	SD
The importance of having at least one son	2,263	0.417	0.369	1,115	0.457	0.371
The importance of being memorized and worshiping after death	2,315	0.738	0.287	1.066	0.753	0.278
The importance of bringing honor to your family clan	2,263	0.593	0.319	1,115	0.615	0.314

Table A.4: Migrants and Home Province Characteristics in Mainland China

Dependent variable	Log Migrant population			
	(1)	(2)	(3)	(4)
Log Population of home province	1.38***	1.36***	1.26***	1.24***
	(0.14)	(0.11)	(0.17)	(0.18)
Log Population density of home province		38.89***	37.58***	31.40***
		(10.45)	(10.80)	(11.59)
Ancestor worship density			2.69	2.28
			(2.86)	(3.09)
Confucian scholars density				-0.01
				(0.04)
Clan density				0.90
				(0.67)
Social organization density				0.01
				(0.01)
# of Provinces	48	48	48	48
Adj. R^2	0.612	0.689	0.690	0.691

Notes: The sample is provinces in mainland China. This table reports coefficients from regressing log migrant population on log home population in 1953, home population density in 1953, ancestor worship density, Confucian scholars density, clan density in 1911, and social organization density in 1935. Robust standard errors are in parentheses. *** Significant at the 1 percent level. ** 5 percent level. * 10 percent level.

Table A.5: Robustness: The Effect on the Sex of the 3+ Birth Order

Dependent variable	Male = 1					
	County clustering (1)	Two-way clustering (2)	Parents' origins (3)	Year 1985 as pre-period (4)	Logit (5)	Probit (6)
Ancestor worship (migrants) X Post	0.32***	0.32***	0.34***	0.24***	0.32***	0.32***
	(0.07)	(0.08)	(0.08)	(0.09)	(0.08)	(0.08)
Parents' origins-birthyear FEs	No	No	Yes	No	No	No
# of Counties	21	21	21	21	21	21
# of Towns	354	354	354	354	354	354
# of Observations	358,287	358,287	358,287	358,287	358,287	358,287
Outcome mean	0.527	0.527	0.527	0.527	0.527	0.527
Ancestor worship (migrants) s.d.	0.018	0.018	0.018	0.018	0.018	0.018

Notes: This table reports coefficients from estimating Specification (1) plus different variants, on the sample of 3^{rd}+ birth order aged 0-9 children whose parents are both locals. *Geographic characteristics:* the suitability index of cotton, maize, wet rice, white potato, wheat, and tea; (ln)distance to seashore, (ln)distance to Taipei. *Family controls:* birth order of the child, age of parents at child's birth, and years of schooling of parents. Standard errors are all clustered at the town level. Standard errors robust are clustered at town level, except in column 1, where I allow for clustering at county level and in column 2, where I allow for two-way clustering at town level and county-birthyear level. In column 3, I include parents' origin-birthyear fixed effects to control the heterogeneous effects of family culture. In column 4, I change *Post* to 0 if the birthyear is 1985. In column 5 and 6, I report the marginal effects of Logit and Probit model at the mean of covariates.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A.6: Corrlation of Ancestor Worship (Migrants) with Alternative Measures Weighted by Original Population and Original Area, or Generated by Number of Ancestor Worship Festivals

Dependent variable	Ancestor worship (migrants)		Ancestor worship (festivals)		
Weights	Pop	Area	None	Pop	Area
	(1)	(2)	(3)	(4)	(5)
Ancestor worship (migrants)	1.09***	0.87***	9.29***	10.55***	7.71***
	(0.01)	(0.01)	(0.71)	(0.83)	(0.74)
Towns (Observations)	354	354	354	354	354
Adj. R^2	0.939	0.912	0.328	0.314	0.235

Note: The table is to present the correlation between different statistics of ancestor worship culture, i.e. aggregating ancestor worship density and the number of ancestor worship festivals from county to province with weighted in population and area and without weights. Population data is from the 1953 China Population Census. Area data is from the China Historical Geographic Information System. Standard errors are in parentheses.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A.7: Alternative measures of Ancestor Worship

Dependent variable	Male = 1					
Variable Z	Ancestor worship (migrants)			Ancestor worship (festivals)		
Weights of Z	None	Pop	Area	None	Pop	Area
	(1)	(2)	(3)	(4)	(5)	(6)
Variable Z X Post	0.32***	0.28***	0.35***	0.03***	0.02**	0.03***
	(0.08)	(0.08)	(0.08)	(0.01)	(0.01)	(0.01)
Outcome mean	0.527	0.527	0.527	0.527	0.527	0.527
Explanatory variables s.d.	0.018	0.018	0.017	0.241	0.270	0.236

Notes: This table replicates column 4 of Table 2 with alternative measures of ancestor worship culture brought by Chinese migrants. The alternative measures are mentioned in Table A.6. All the fixed effects and covariates are controlled in each column. Estimate in the column 1 is the baseline estimate in column 4 of Table 3. *Geographic characteristics:* the suitability index of cotton, maize, wet rice, white potato, wheat, and tea; (ln)distance to seashore, (ln)distance to Taipei. *Family controls:* birth order of the child, age of parents at child's birth, and years of schooling of parents. Standard errors are all clustered at the town level.
*** Signicant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A.8: Horse Racing: Other Festivals in the County Gazetteers

Dependent variable	Male = 1				
	(1)	(2)	(3)	(4)	(5)
Ancestor worship (migrants) X Post	0.32***				0.37**
	(0.08)				(0.14)
Religious festivals (migrants) X Post		0.08*			0.12
		(0.05)			(0.14)
Marketplace festivals (migrants) X Post			0.10		-0.15
			(0.11)		(0.28)
Agricultural festivals (migrants) X Post				0.19	-0.34
				(0.18)	(0.51)
# of Towns	354	354	354	354	354
# of Observations	358,287	358,287	358,287	358,287	358,287
Outcome mean	0.527	0.527	0.527	0.527	0.527
Ancestor worship (migrants) s.d.	0.018	0.018	0.018	0.018	0.018

Notes: This table replicates column 4 of Table 2 with measures of other festivals generated from county gazetteers. The festivals are religious festivals (excluding ancestor worship), festivals with marketplace (business activities), and agricultural festivals. I use ChatGPT-5 to digitize the county gazetteers and generate the share of corresponding festivals. The constructions of other festivals are similar to the ancestor worship (migrants) except replacing ancestor worship density with the share of other festivals in equations. The Estimate in column 1 is the baseline estimate in column 4 of Table 2. All the fixed effects and covariates are controlled in each column. *Geographic characteristics:* the suitability index of cotton, maize, wet rice, white potato, wheat, and tea; (ln)distance to seashore, (ln)distance to Taipei. *Family controls:* birth order of the child, age of parents at child's birth, and years of schooling of parents. Standard errors are all clustered at the town level.
*** Signicant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A.9: Horse Racing: Other Son Preference related Cultures

Dependent variable	Male = 1						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ancestor worship (migrants) X Post	0.32***						0.37***
	(0.08)						(0.11)
Clan (migrants) X Post		0.01					-0.01
		(0.01)					(0.01)
Confucian scholars (migrants) X Post			0.00				-0.00
			(0.00)				(0.00)
Tea (migrants) X Post				0.00			-0.03*
				(0.01)			(0.02)
Wet rice (migrants) X Post					0.03*		0.04*
					(0.01)		(0.02)
Wheat (migrants) X Post						0.03	-0.04
						(0.02)	(0.03)
# of Towns	354	354	354	354	354	354	354
# of Observations	358287	358287	358287	358287	358287	358287	358287
Outcome mean	0.527	0.527	0.527	0.527	0.527	0.527	0.527

Notes: This table replicates column 4 of Table 2 with measures of other placebo cultures brought by Chinese migrants. The cultures are family clan culture, Confucian culture, tea culture, rice culture, and wheat culture. The constructions of cultures are similar to the ancestor worship (migrants) except replacing ancestor worship density by the corresponding measures of cultures in equations. The Estimate in column 1 is the baseline estimate in column 4 of Table 2. All the fixed effects and covariates are controlled in each column. *Geographic characteristics:* the suitability index of cotton, maize, wet rice, white potato, wheat, and tea; (ln)distance to seashore, (ln)distance to Taipei. *Family controls:* birth order of the child, age of parents at child's birth, and years of schooling of parents. Standard errors are all clustered at the town level.
*** Signicant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A.10: The Heterogeneous Effect by Migrant Share and Cultural Distance

Dependent Variable	Male = 1					
Subsamples	Migrant Share		Distance to Confucian School		Foot-binding Rate	
	< median	> median	< median	> median	< median	> median
	(1)	(2)	(3)	(4)	(5)	(6)
Ancestor worship (migrants) X Post	0.29	0.35***	0.46***	0.05	0.17	0.56***
	(0.17)	(0.09)	(0.06)	(0.31)	(0.18)	(0.10)
# of Towns	177	177	177	177	177	177
# of Observations	128,920	229,367	237,586	120,701	144,850	213,437
Outcome mean	0.525	0.529	0.527	0.527	0.528	0.527
Ancestor worship (migrants) s.d.	0.015	0.018	0.019	0.011	0.015	0.018

Notes: This table reports OLS coefficients from estimating Specification (1) with different subsamples. All columns contain county-birthyear fixed effects, town fixed effects, and a set of historical controls, as well as a series of geographic characteristics and family controls. *Geographic characteristics:* the suitability index of cotton, maize, wet rice, white potato, wheat, and tea; (ln)distance to seashore, (ln)distance to Taipei. *Family controls:* birth order of the child, age of parents at child's birth, and years of schooling of parents. Standard errors are all clustered at the town level.
*** Significant at the 1 percent level.

Table A.11: The Effect of Migrant Mother's Ancestor Worship on the Sex of 3+ Birth Order Children

Dependent variable	Male = 1			
	(1)	(2)	(3)	(4)
Ancestor worship (mother) X Post	-0.23	-0.42	-0.42	-0.64
	(0.22)	(0.39)	(0.38)	(0.64)
Town-birthyear FEs	Yes	Yes	Yes	Yes
Mother's origin FEs	Yes	Yes	Yes	Yes
Father's origin-birthyear FEs	Yes	Yes	Yes	Yes
Origin controls (mother) X Post	No	Yes	Yes	Yes
Family controls X Post	No	No	Yes	Yes
# of Mother's origins	45	45	45	40
# of Towns	283	283	283	234
# of Observations	20,193	20,193	20,193	12,159
Outcome mean	0.534	0.534	0.534	0.529
Ancestor worship (mother) s.d.	0.033	0.033	0.033	0.033

Notes: This table reports coefficients from estimating Specification (2) on the sample of 3^{rd}+ birth order aged 0-9 children whose mother is a second-generation migrant in columns 1-3. The sample is restricted to parents who are both migrants in column 4. The results from regressing male indicator on town-birthyear fixed effects, mother's origin fixed effects, father's origin fixed effects, and origin controls (mother) as well as a series of family controls. *Origin controls (mother):* Imperial scholars density, Confucian clan density, and suitability index of wheat, wet rice, and tea of mother's origin. *Family controls:* birth order of the child, age of parents at child's birth, and years of schooling of parents, as well as whether parents are from the same origin. Standard errors are all clustered at the town level and migrant mother's origin level.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 1 percent level.

Table A.12: The Effect of Ancestor Worship of Migrant Neighbors from Other Origins than Mother on the Sex of 3+ Birth Order Children

Dependent variable	Male = 1		
	(1)	(2)	(3)
Ancestor worship (neighbors, mother) X Post	0.20	0.36	2.11
	(2.28)	(2.33)	(3.34)
Ancestor worship (neighbors, mother) X Post			7.16
X Fraction of migrants from other origins			(13.05)
Town-birthyear FEs	Yes	Yes	Yes
Parents' ancestry-birthyear FEs	Yes	Yes	Yes
Family controls X Post	No	Yes	Yes
# of Mother's origin	37	37	37
# of Towns	274	274	274
# of Observations	12115	12115	12115
Outcome mean	0.529	0.529	0.529
Ancestor worship (neighbors, mother) s.d.	0.006	0.006	0.006

Notes: This table reports coefficients from estimating Specification (3) on the sample of aged 0-9 children whose parents are both migrants and mother is a second-generation migrant. The results from regressing male indicator on town-birthyear fixed effects, parents' ancestry-birthyear fixed effects, and a series of family controls. *Family controls:* birth order of the child, age of parents at child's birth, and years of schooling of parents, as well as whether parents are from the same origin. Standard errors are two-way clustered at the town level and the migrant mother's origin level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 1 percent level.