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Elite Persistence in Family: The Role of Adoption in Prewar Japan*

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Abstract

Why can elite families often maintain their social and economic status over multiple generations? We show that adoption can contribute to the persistence of elite status by utilizing a unique historical framework of prewar Japan. However, the preference for adopted heirs may lead to selection bias in the process of choosing heirs, potentially biasing OLS results negatively. To address this selection bias, we use the gender of the firstborn child as an instrument for the adoption decision. We find that having an adopted heir increases the probability of maintaining elite status in the son's generation by 27% compared to having a biological heir. Furthermore, we show that this result is driven by matching high-quality adopted sons with fathers who were highly successful in their early lives.

Keywords: Intergenerational transmission, Adoption, Succession, Family, Elite
JEL Codes: J12, J13, J62, N35

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1 Introduction

Why can elite families often maintain their social and economic status over multiple generations? Children born into rich families tend to stay rich, and the poor stay poor. Families typically strive to maintain or enhance their social and economic status, especially if they belong to the elite. Seminal work by Clark (2014) shows that a small fraction of top elites have been over-represented in elite positions over generations in many countries and societies. However, little is known about the mechanism of elite persistence.

This paper is the first to suggest that adoption can be a tool to achieve this. Adopting an heir from outside the family lineage expands the choice set to a broader talent pool, rather than being limited to choosing an heir only from biological children. Does adoption improve the persistence of elite status over generations?

To answer this question, we examine the effect of adoption on the elite persistence within families, regressing the change in family social status over generations on an adoption dummy. However, the simple OLS specification could be biased. For example, suppose a family acknowledges their lower innate genetic ability and thus prefers adopting a son outside the family members over consanguineous relationships, the decision to adopt is likely negatively correlated with the family's innate genetic ability. This would result in a negative bias for OLS. In this scenario, it would look like adoptees perform worse, but it is only because they are in families where elite status preservation is less likely due to factors such as lower innate genetic ability.

Our historical setting provides a unique opportunity to identify the causal effect of heir adoption on elite persistence. Although the practice of adopting male successors was widespread across Europe and Asia, from Babylonia to modern-day East Asia (Goody, 1969; Feng and Lee, 1998; Kim and Park, 2010; Huebner, 2013; Kurosu, 2013; Kumon, 2025), pre-war Japan is exceptional in the richness of micro-level records and in inheritance rules that create plausibly exogenous variation in adoption decisions.[1] At this time in Japan, the in-

[1]Kim and Park (2010) focus on Korean upper-status families, called Bulcheonwye families, and compares

heritance law clarifies the right of inheritance to which child property and businesses are passed on. The law prioritized kinship, gender, and birth order over merit in determining heirs. The eldest son inherited all the family's businesses and property. According to the law, adopting a son as an heir was permitted only if the family had no male heir. We incorporate this historical concept of inheritance law into our identification strategy, which uses the gender of the firstborn child as an instrument for the adoption decision. As a society with a strong tradition of male-line inheritance and adoption, prewar Japan offers an ideal setting to answer our question. We show that when the firstborn child is female, the probability of adopting a son is 15.5 percentage points higher than in families with firstborn sons.

For this analysis, we compiled the Personnel Inquiry Records (PIR) published in 1903, 1915, 1928, 1934, and 1939.[2] These records are a selective list of socially distinguished individuals who hold top positions, such as CEOs, politicians, and high-ranking bureaucrats, including about the top 0.1% of individuals regarding social status. In our analysis, "being listed in PIR" is a proxy for elite status. A unique aspect of the PIR published in 1903, 1915, and 1928 is that these datasets include family information, such as first name, year of birth, and relationship to the listed individuals. Using this information, we construct a dataset of father-heir pairs. Then, by extensive name and birth year matching, we identify the elite status of heirs. Through these processes, we construct a dataset including 25,405 father-heir pairs.

Our preliminary results in the simple OLS specification indicate that adopted heirs are 19% more likely to become elites than biological heirs. In line with this, our IV regression shows that having an adopted heir increases the probability of maintaining elite status in the son's generation by 27% compared to having a biological heir, which aligns with our

biological sons and adopted male-adult sons in terms of social status. They find that adopted sons have a higher probability of passing the state exam than biological sons. Feng and Lee (1998) use a complete genealogical record of the Qing imperial lineage (1644–1911) to analyze the adoption of male heirs. The study shows that adoptions were limited to close relatives, and that the transfer of sons from higher-ranking noble families into lower-ranking families occurred at twice the rate of adoptions in the opposite direction.

[2]Digitized by Hidehiko Ichimura and Yasuyuki Sawada (Ichimura *et al.*, 2024). For more detailed data description, see Kumanomido *et al.* (2025).

conjecture on the negative bias in OLS. This suggests that adopted heirs contribute to maintaining the family's elite status.

To provide a clear insight into the benefits of adopted sons, we explore the following four mechanisms that may drive our main results: (i) the quality of adopted sons, (ii) the families' access to talented adopted sons, (iii) the role of adoption in mitigating intergenerational skill mismatch, (iv) the elite networks between adoptive families and adoptees' biological families. We find that high-quality adopted sons drive our main results. Our additional analysis reveals that fathers who have achieved great success at an early age and fathers who are likely to be recognized as potential elites from a young age have better access to high-quality adopted sons. Furthermore, we provide suggestive evidence that the use of the adoption system mitigates the intergenerational skill mismatch by recruiting heirs whose skills and career trajectories closely match those of their fathers. Finally, our analysis shows that approximately 57% of adopted heirs come from non-elite families, implying that adoption most often links elite adoptive families to non-elite biological families rather than constructing closed networks among elites. The results also indicate that individual-level (not family-level) intergenerational upward mobility occurs through adoption.

This study is related to several branches of literature. First, this work furthers our understanding of the mechanism of elite persistence. For example, wealth shocks are often insufficient to overturn elites. Dupont and Rosenbloom (2018) and Bellani *et al.* (2022) document how Southern slave-owning families and their descendants retained political and economic power well into the late nineteenth century, despite emancipation and the Civil War. Ager *et al.* (2021) shows that despite the wealth shock following the Civil War, Southern white descendants regained economic status over generations by forming connections with other elite families and through marriage networks. Alesina *et al.* (2020) analyze how the elite structure changed using the Chinese Communist Revolution in the 1950s and the Cultural Revolution from 1966 to 1976 as shocks. They find that the intergenerational transmission of values contributes to elite persistence. In contrast, networks might be a crucial determinant

of strong intergenerational income persistence. Corak and Piraino (2011) use Canadian tax data to show that the sons of top 5% income earners are more likely to work in the same firms as their fathers compared to sons of those below the 5% income threshold. Zimmerman (2019), Michelman *et al.* (2022), and Barrios Fernández *et al.* (2023) show that admission to elite universities, or greater access to networks associated with such institutions, significantly increases the likelihood of reaching the top 0.1% of the income distribution. However, much remains to be understood about how elites persist. This paper shows that the adoption expands the size of the talent pool in the selection of successors and contributes to the persistence of high social status for elite families.

Second, this paper contributes to the literature on the selection of successors based on meritocracy. In recent decades, we have seen that meritocracy outperforms nepotism in the selection of successors in politics and business (Bennedsen *et al.*, 2007; Cucculelli and Micucci, 2008; Mehrotra *et al.*, 2013; Ahrens *et al.*, 2015; Chang and Shim, 2015; Bai and Jia, 2016). These papers related to business focus on how CEOs' preferences for successors' characteristics expand the size of the talent pool, subsequently influencing firm performance. Using a Danish corporate dataset, Bennedsen *et al.* (2007) find that CEOs selected from non-family members are more likely to outperform CEOs selected from family members. Ahrens *et al.* (2015) show that preference for male business successors diminishes the chances for talented females to inherit the business. Our primary findings center on elite families holding top positions in either the private or public sectors. We reveal that the option of selecting adopted heirs expands the pool of potential successors, making them more likely to maintain their elite status than biological heirs. This is consistent with the findings of Mehrotra *et al.* (2013), which show that firms selecting adopted heirs outperform those that choose biological heirs as successors at running family firms.

Third, this paper builds on the recent empirical literature studying which factor is more important, nurture or nature, for children's future by using adoption data (Plug and Vijverberg, 2003; Sacerdote, 2007; Liu and Zeng, 2009; Black *et al.*, 2020; Fagereng *et al.*, 2021).

Black *et al.* (2020) reveal that environments are more important for economic outcomes than biology using administrative data on Swedish adoptees. Sacerdote (2007) also shows that nurture is essential in determining children's behavior using data on Korean American adoptees who were quasi-randomly assigned to adoptive families. Meanwhile, using US data, Liu and Zeng (2009) find that the earnings correlation between fathers and children is lower for adoptees, which implies that inheritable attributes are crucial for passing parents' earning ability on to their children. Plug and Vijverberg (2003) show that about 55–60 percent of parental ability is genetically transmitted by comparing biological and adoptive children. Our results support nurture over nature; being adopted by an elite family helps adoptees climb the social ladder. Thus, as a policy implication, expanding access to substantial assets, family businesses, and comprehensive educational resources for talented children who lack these resources could enhance social mobility.

Fourth, this paper is related to the literature on the intergenerational persistence of economic outcomes, which studies the reasons for high intergenerational persistence (or elasticity) across generations (for reviews, see Black and Devereux, 2011; Mogstad and Torsvik, 2023). Since a seminal paper Becker and Tomes (1979), the literature has empirically studied this question mainly using the Nordic or North American data (Corak, 2013; Chetty *et al.*, 2014; Adermon *et al.*, 2021).[3] The literature argues that intergenerational elasticity is heterogeneous across space and income levels. Björklund *et al.* (2012) show that intergenerational transmission is stronger in the top income tier; for the top 0.1% income strata, intergenerational elasticity of income rises to 0.9. Our study focuses on the top 0.1% of the population regarding social status, using the intergenerational transmission of elite status as a measure of intergenerational mobility. Our data indicates that only less than 40% of the heirs maintain their elite status. Although we cannot simply compare the values as we only see two social statuses (elite and non-elite), a relatively low persistence indicates that Japan

[3]Several papers estimate intergenerational elasticity using different countries' data, for example, Deutscher and Mazumder (2020) for Australia; Güell *et al.* (2018) and Mocetti *et al.* (2022) for Italy; Long and Ferrie (2013) for comparisons of US and UK; Ueda (2009) for Japan.

was a high-mobility country during the early 20th century, as suggested in Clark (2014).

Finally, our empirical results make a contribution to the role of adoption as a strategy for preserving family assets and social status in early-modern and prewar Japan. During prewar Japan, traditional perspectives on adoption viewed it as an alternative means to find an heir in the absence of a biological heir (Kurosu and Ochiai, 1995; Moriguchi, 2010; Kurosu, 2013; Mehrotra *et al.*, 2013; Kumon, 2025). Focusing on 584 village censuses (1637–1872), Kumon (2025) show that land-owning families who lacked a biological son adopted a male heir, which prevents household extinction and keeps intergenerational transmission of landed wealth within the lineage. Furthermore, it indicates that the adoption market reallocated surplus sons from collateral or lower-rank families to wealthy families who lacked a male heir, suggesting that adoption stabilized the intergenerational transmission of wealth. Kurosu (2013) focus on two northeastern villages during 1716–1870 and shows that adoption was especially common among households of higher socioeconomic status (and among female-headed families) as a strategy for preserving the family lineage. Mehrotra *et al.* (2013) empirically show that the perspective towards adoption in prewar Japan continued even in postwar Japan, especially in selecting CEOs among family business firms. They find that adopted heirs outperformed biological heirs and achieved performance as well as the founders. Our paper provides a clear insight into the adoption market, emphasizing the significant role of adopted heirs in the intergenerational transmission of elite status.

This study proceeds as follows. Section 2 explains the historical background regarding the law and social system in prewar Japan. The following sections describe the dataset and subsequently present our empirical strategy for examining how intergenerational transmissions differ between biological and adopted sons in Section 4. Section 5 shows the results, and section 6 discusses possible mechanisms. Section 7 concludes.

2 Background

In many societies that place a high value on continuing the family business, adoption has served as an alternative means to secure an heir, ensuring the transfer of family property and businesses to the next generation (Feng and Lee, 1998; Kim and Park, 2010; Kurosu, 2013; Kumon, 2025). Adoption for this purpose was widespread in prewar Japan, with practical rules enforced by the inheritance laws in the Meiji period (1868–1912). The government believed that business continuity and preventing conflicts over inheritance distribution within families would contribute to stable economic growth. Consequently, the government prioritized the eldest son as the primary heir, giving him the right to inherit all properties and business operations belonging to his family. The law also defined the role of adoptees as an alternative means to secure an heir in the absence of any sons. In the following sections, we provide a detailed background of inheritance and adoption practices in prewar Japan.[4]

Inheritance Law in Meiji Civil Code

The Meiji Civil Code, enacted in 1898, was based on the French Civil Code, and the central government shaped the law to align with Japan's social norms and customary practices. The inheritance law within the Civil Code emphasized the concept of the "family" as the primary social and legal unit, establishing a legal framework for transferring property and business within the family. Under the inheritance law, the family head ("*Katoku*" in Japanese) fully controlled family property and business operations. Upon reaching 60, the incumbent family head could retire by passing the role and responsibilities to an heir. The heir was expected to maintain the family's social status and property, manage the business, and ensure their transfer to the next generation. A distinctive feature of the inheritance law was that the family heads did not have exclusive rights to select their heirs. The central government

[4]Some papers show that the inheritance rules have socio-economic effects. For example, by focusing on the geographic variation in inheritance rules for lands, Bartels *et al.* (2024) find that areas with more equal land inheritance show higher average incomes and more entrepreneurship in Germany. Gay *et al.* (2023) and Curtis *et al.* (2023) examine the effects of inheritance reforms on fertility.

established these rules for selecting heirs to prevent conflicts over who would inherit family assets and business within families. The law determined the order based on kinship rank, gender rank, and birth order. These rules are summarized below.[5]

Rule 1: Children have the highest rank among the family members (including adopted sons).

Rule 2: Sons have a higher inheritance order than daughters.

Rule 3: The eldest has a higher inheritance order.

As a result, the eldest son inherited the role of the family head.[6] Since this perspective on inheritance was prevalent among samurai and wealthy merchants during the Tokugawa period, it was extended to all citizens by the inheritance law.

The Role of Adoptees in Family

Under the inheritance law, the government strictly limited the adoption of sons, permitting it only when a family had no male children. This was for the following reasons. If a family already had sons and adopted a son older than their firstborn, the inheritance rights would transfer from the firstborn to the adopted son, as the adopted son would then be considered the eldest. This situation could have potentially led to conflicts over inheritance rights between the firstborn and the adopted sons. To align adoption practices with the inheritance law framework, the government provided the following adoption rules.[7]

Rule 1: Adoptees were treated equally to biological sons. Hence, they could inherit the family property (and family business, if any) with the same rights as their biological sons.

[5]The inheritance rules can be found in the Horei Zensho (1898): see `https://dl.ndl.go.jp/pid/788007/1/36` for the inheritance rule, `https://dl.ndl.go.jp/pid/788007/1/26` for the adoption rule.

[6]Table A1 shows the difference in the probability of being listed in PIR between sons with an inheritance right and those without. The probability is larger for potential heirs (the eldest son or adoptees) than for sons born second or subsequent in our dataset. This implies that the inheritance law played a key role in the intergenerational transmission of elite status from a family head to his heir.

[7]Due to the low inheritance rank of daughters in the succession hierarchy, there were no strict rules regarding the adoption of girls.

Rule 2: The central government permitted the adoption of a son only in the absence of any male children.

Rule 3: Under the inheritance law, the length of time that a son had been part of the family determined his position in the order of inheritance rights.[8]

Consequently, adopted sons were always placed at the top of the inheritance hierarchy. These rules regarding adoption under inheritance law clarified the role of adoptees as an alternative means of securing an heir in the absence of any sons.

3 Data and Descriptive Statistics

To examine whether adoption improves the persistence of elite status over generations, we construct a dataset of elite father-heir pairs. At the beginning of this section, we describe the details of our main data sources and the definition of elites used in this study. Next, we introduce the process for constructing father-son pairs. Finally, we present descriptive statistics.

Personnel Inquiry Records

We compiled five editions of the Japanese Personnel Inquiry Records (PIR) published in 1903, 1915, 1928, 1934, and 1939.[9] PIR is a selective list of socially distinguished individuals, including top business managers, professional elites, high-ranking military servants, and high-ranking public servants, collectively referred to as "elites." The dataset includes biographical details about these elites, such as birth year, birthplace (prefecture level), current address (prefecture level), social group (*Kazoku* (court nobles), samurai, or commoners), fi-

[8] A family could adopt a son-in-law (adopted sons who married daughters of the adoptive family) even if the family already had a biological son designated as the heir to the family headship. However, under Rule 3 in adoption, the son-in-law could not become the heir, even if he was older than the biological son.

[9] The original versions of PIR can be downloaded from the website of the National Diet Library (`https://dl.ndl.go.jp/pid/779810/1/1`). The above five editions of PIR were digitized by Hidehiko Ichimura and Yasuyuki Sawada. Kumanomido *et al.* (2025) summarize the dataset.

nal educational institution, and occupation history (including past affiliations and positions). By combining these five editions of PIR, we construct an elite list covering approximately 100 years of birth cohorts from the early 19th century to the early 20th century. Figure A1 shows the proportion of individuals listed in PIR relative to the total population for each edition of PIR. The rate increased over time and reached 0.08% in 1939. Overall, being listed in PIR indicates that those individuals are among the top 0.1% of the population regarding their social status.[10] In Appendix A.2, we discuss the criteria of PIR.

We categorize the individuals listed in PIR into four occupation groups:[11]

1. Business Elites: Individuals who are engaged in private companies. These include either (modern) business managers with formal titles (e.g., CEO).

2. Public Servants: Individuals who are high-ranking civil servants, politicians, or prefecture governors.[12]

3. Military Servants: Individuals who are high-ranking military servants.

We also categorize these elites according to their highest level of education achieved. One defined group consists of those who graduated from Imperial Universities, which were national universities considered the most selective and prestigious. After graduating from a secondary school, one had to enter a highly competitive national higher school to enter Imperial Universities.[13]

We further classify these elites into two historical social groups established under the Tokugawa period (1603–1868): "samurai" and "commoners". Samurai families formed military and civil servants during the Tokugawa period. This group also includes the *Kazoku*,

[10] We use the male population as a denominator as the number of female elites in PIR is limited.

[11] An individual's occupation is represented as a dummy variable. As the complete occupational history of each individual is available, an elite may have more than one occupation, which is not mutually exclusive.

[12] Starting in 1887, the central government conducted examinations to select bureaucrats. Graduates of top national universities were given preferential treatment in high-level bureaucratic exams, whereas graduates from public secondary schools and above were favored in regular bureaucratic examinations (Amano, 2007).

[13] An individual's education is represented as a dummy variable, which is mutually exclusive.

descendants of feudal lords and court nobles. Commoner families were engaged in merchants, artisans, or farmers during the Tokugawa period. Social mobility between these groups was highly restricted before 1868. Although formal barriers were removed after the Meiji Restoration (1868–1912), the classification between samurai and commoners remained as a social identity.[14]

Constructing Father-heir Pairs

In this paper, we define elite status as "being listed in PIR." To assess the persistence of elite status within families, we focus on the elite status of heirs with elite fathers.

To construct a father-heir dataset, we obtain the first names and year of birth of the heirs from the first three editions of the PIR (1903, 1915, and 1928).[15] Furthermore, we identify whether these heirs are listed in the subsequent editions of PIR (1903, 1915, 1928, 1934, and 1939). The process of constructing this dataset is explained in detail below.

Step 1: Data extraction: we obtain all children's first names and year of birth from PIR published in 1903, 1915, and 1928.

Step 2: Constructing sons' full name: we extract the 1, 1-2, and 1-3 characters from the father's full name and combine each with the child's first name. By this data processing, we obtain three patterns of the child's full names for each child.

Step 3: Identifying the heir: For each elite father in our sample, we identify the heir as the oldest biological son or, if applicable, the adopted son. In cases where both exist, we identify the adopted son as the heir, as the law only allows adoption without biological heirs.

[14]Samurai include the *Kazoku*, families of former local lords from the Tokugawa period. They represented only 0.01% of the population. An individual's social group is represented as a dummy variable, which is mutually exclusive.

[15]The original dataset contains only the sons' first names and, for the elite fathers, does not indicate which part of their names is the surname and which is the given name.

We exclude father-heir pairs where either the father or the heir has missing information on first name, birth year, or current residence. Where fathers are listed more than once in PIR, our data are structured to ensure that father-heir pairs appear only once. The procedure for matching heirs with their elite status is detailed below.

Step 5 Identifying the elite status of heirs: Using the three patterns of heirs' full names and heirs' year of birth, we identify whether the sons are listed in PIR in any of the five editions of the PIR.

Step 6 Identifying the elite status of heirs who inherit their father's first name: In elite families, some heirs inherit the family headship with the same first name as their fathers. In such cases, the heirs' first names may differ from their childhood names. To overcome this problem, we use the name of the father and the year of birth of the heirs to identify the elite status of the heirs.

From this data processing, we obtain 25,405 father-heir pairs. All subsequent analyses are based on this dataset.[16]

Descriptive Statistics

Before starting the regression analysis, we show the key summary statistics of 25,405 father-heir pairs. By examining the difference in the characteristics between families with adopted heirs and those with biological heirs, we describe the potential endogeneity bias and how to deal with the bias in our analysis. We further explore the heterogeneity of demand for adopted sons across fathers' characteristics.

Table 1 in column (1) presents the results of all 25,405 families. Out of 25,405 families, we find that 22,771 families are biological heirs and 2,634 families are adopted heirs (column (2)–(3)). In panel A, we show the key statistics of our baseline identification. Among families with adopted heirs, 80% hold a female as a firstborn child. In contrast, among

[16] As a robustness check for possible mismatching in constructing father-heir pairs, we show that the main results are hardly changed when we exclude typical surnames from our sample in Table A4.

families with biological heirs, 39% of them hold a female as a firstborn child. The difference indicates that the gender of the firstborn child is strongly correlated with the probability of holding an adopted heir. Regarding the elite status for heirs, measured by the probability of being listed in PIR, adopted heirs are 15 percentage points more likely to become elite than biological heirs without controlling for confounders.[17]

Regarding the age gap between fathers and their heirs, families with adopted heirs tend to be smaller than those with biological heirs. This is partly because sons-in-law who are adopted after marriage and become heirs are older than the eldest daughters (panel B). Since the probability of being listed in PIR increases with age, we control for the age of the heirs and their fathers.[18]

In panel C, we show the difference in the total number of children. The number of children is larger for families with biological heirs than for those with adopted heirs, possibly reflecting the strong preference for biological heirs.

Panel D shows the difference in fathers' characteristics, which may reflect the heterogeneity in the demand for adopted heirs by fathers' occupation. Families with adopted heirs are 6 percentage points more likely to be engaged in business sectors relative to families with biological heirs. In contrast, families with adopted heirs are 2–3 percentage points less likely to have jobs as central public servants or military servants relative to families with biological heirs. These gaps suggest that elite fathers in the private sector have a strong preference to recruit adopted heirs, possibly because business succession is less tightly governed by formal meritocratic criteria than public or military careers. The lower share of imperial university graduates implies that fathers who lacked higher educational backgrounds or those who did not have access to higher education relied on adoption to bring qualified heirs. Conversely, the higher share of commoner fathers indicates that adoption also served as a channel for maintaining elite status. We return to this occupational heterogeneity and its implications

[17] This figure varies by the fathers' cohort. For fathers born before 1860, this ratio reaches around 40 percentage points.

[18] Although our sample has several outliers regarding the father-heir age gap, the main results are robust when excluding the top and bottom 5% of the sample.

for elite persistence in Section 5.

4 Empirical Strategy

This section presents our empirical strategy, describes potential biases from OLS with omitted variables, and discusses our IV regressions.

Transmission Coefficient

We estimate the effect of adopting a son on the persistence of a family's elite status, focusing on the difference between families with an adopted heir and those with a biological heir. We consider the following regression model:

$$(\text{Listed in PIR Dummy})_i = \sum_e \alpha_e Z_{e,i} + \beta(\text{Adoptee Dummy})_i + \mathbf{X}'_{f(i)}\gamma + \delta\chi_{f(i)} + u_i \quad (1)$$

The outcome variable is the dummy variable that takes unity if the heir i is listed in any of the five editions of PIR. The main regressor is the *Adoptee Dummy* that takes unity if the heir i is an adopted son. Our sample only includes the eldest or adopted sons with an inheritance right. Thus, β indicates how much more likely an adopted heir is to be elite than a biological heir. $\mathbf{X}'_{f(i)}$ is a vector of observable family characteristics such as the father's age, occupation, educational attainment, and family size.[19] As some empirical studies have shown, intergenerational persistence possibly has changed over time (Aaronson and Mazumder, 2008; Chetty *et al.*, 2017; Song *et al.*, 2020). $Z_{e,i}$ is a set of PIR edition dummies for which the father is listed, capturing macro trends. $\chi_{f(i)}$ is an unobservable family characteristic (for example, preference for adoption). The error term u_i is an unobservable scalar orthogonal to the regressors.

[19] Table A5 presents the correlation between the adoption decisions and $\mathbf{X}'_{f(i)}$.

Omitted Variable Bias

In our main specification, the coefficient β captures the effect of adopting a son as an heir on the persistence of elite status compared to families with biological heirs. However, adoption can be strategically determined. Some families may have a strong preference for adoption instead of selecting their own biological sons as heirs. This preference is unobservable to econometricians, thus captured by $\chi_{f(i)}$ in equation (1). Unlike studies that use random assignment of adoptees as exogenous variation (Sacerdote, 2007; Fagereng *et al.*, 2021), our context suffers from endogenous issues in adoption decisions, even when controlling for observable family characteristics. The bias direction for β depends on δ and the correlation between the adoption decision and unobservables, which is ambiguous in advance.

Here, we give one obvious reason for causing negative bias: the family's innate genetic ability. If a family acknowledges its lower innate genetic ability and thus prefers adopting a son outside the family over consanguineous relationships, the decision to adopt is likely negatively correlated with the family's innate ability. In this scenario, the OLS estimates are negatively biased, as families with higher innate genetic abilities presumably have a higher probability of maintaining elite status. To address the potential omitted variable bias, we introduce an instrument for the adoption decision.

Instrumental Variable

The head of the family had no exclusive right to choose his heir. Instead, the inheritance order gave priority to the eldest son. In addition, traditional marriage practices required a woman to join her husband's family upon marriage, which conflicted with the inheritance rule that the head of the family could not leave his family. Therefore, families without a male heir often adopt a son from another family to pass on the role of family head to the next generation. Given this historical context, the family was more likely to adopt if the firstborn child was female. Since biological gender is randomly determined by nature, we can consider the firstborn child's gender as an exogenous variation. We therefore use it as an

instrumental variable for the family's adoption decision.[20] Table 2 in column (1) compares the probability of adoption by gender of the firstborn child using our main sample. Fathers whose firstborn child is female are 15.3 percentage points more likely to adopt than those whose firstborn is male; this difference is statistically significant at the 1% level. In addition, column (1) shows that the probability of adoption is only 3.7% when the firstborn is male.[21] Column (2) shows the results when we focus on families with two children. We still see a highly significant correlation between the gender of the firstborn child and the decision to adopt. This guarantees the relevant condition of the instrument variable.

In Table A2, we test whether the gender of the firstborn child is balanced across family characteristics that are considered to be determined before the child's birth. For some characteristics, we see statistically significant differences, although the magnitudes are small. This suggests that the exclusion restrictions of our IV are unlikely to hold without conditioning on covariates. Although we cannot directly test the exclusion restriction, we deal with this possible assumption violation by controlling for observable characteristics in the analysis, assuming that a conditional independence assumption holds (Angrist and Pischke, 2008).

We need to stress that our IV strategy mitigates the omitted variable biases stemming from adoption preference, and it captures the possibility of meritocratic selection of adoptees from a broader pool. Therefore, our IV estimate reflects the difference in the probability of maintaining elite status between families that select biological sons and those that choose adopted sons from a wider pool of candidates based on meritocracy as heirs.

[20] Several papers use firstborn-child gender as an instrument for family business succession decision (Bennedsen *et al.*, 2007), women's marriage breakups (Ananat and Michaels, 2008), family business succession expectations (Kodama *et al.*, 2021), and adoptions (Kumon, 2025).

[21] This happens because the sample includes the families that adopted sons before the enactment of the inheritance law. Also, there is the case where the firstborn child is male but dies young. Unfortunately, we cannot identify which case 3.7% belongs to.

5 Results

This section presents our results using OLS and IV regressions, examining the difference in intergenerational transmission of elite status between biological and adopted heirs.

OLS Results

We start our analysis by regressing *Adoptee dummy* on the elite status of heirs (Table 3). As one's social status and earnings vary along the lifecycle, fathers' and heirs' ages should be controlled in regressions to estimate intergenerational correlation (Haider and Solon, 2006; Jäntti *et al.*, 2006). Family size also matters for resource allocation within a household (Becker *et al.*, 2010). Sacerdote (2007) shows that one extra child reduces children's educational attainment using Korean American adoptee data. Children born in smaller families can receive more household resources. Thus, we control for the number of children in the household.

Column (1) of Table (3) shows a positive association between adoption and heirs' success; adopted heirs show a 3.3 percentage points higher probability of being listed in PIR.[22] The negative significant coefficients of year of birth also support the listing probability increases as they age.

Column (2) adds fathers' resident prefecture dummies. As we cannot observe the birthplaces of heirs who are not listed in PIR, we use the fathers' resident prefecture at the time of being listed as a proxy. As shown by many studies, children's future performance depends on where they grow up (Chetty *et al.*, 2014; Heidrich, 2017; Eriksen and Munk, 2020). Figure A2 depicts the portion of families that accomplish intergenerational transmission of elite status in 47 prefectures. Urban areas, such as Tokyo, Kanagawa, Osaka, Kyoto, and Aichi, exhibit high values. These variations align with the papers arguing the heterogeneity of intergenerational mobility across space. The inclusion of these controls has a negligible

[22]Taken together with PIR edition dummies, controlling for fathers' and heirs' year of birth is equivalent to controlling for both ages.

impact on the results in column (1). Taken together, OLS specifications indicate adopted heirs are more likely to become elites than biological heirs.

IV Results

Column (3) of Table 3 shows the result when we use the gender of the firstborn child as an instrument for *Adoptee dummy*. Our IV estimate is positive and statistically significant at 5% level; compared with biological heirs, adoptive ones have a 4.6 percentage point higher probability of being listed in PIR. This is in line with the expected resolution of OLS bias, although the bias is hopefully limited. As the mean dependent variable is 0.17 (see Table 1), adoption is associated with a 27% increase in the probability of elite status persistence across two generations. Our instrument strongly predicts the adoption decisions, even with control variables; the Kleibergen-Paap F-statistic is 885, larger than the critical value.

Robustness Check

For the robustness checks, we conduct the same exercise as in column (3) of Table 3, but with specific restrictions. We control for fathers' occupations (column (1)), use the gender of the second-born child as an instrument conditional on the gender of the firstborn child is female (column (2)), and restrict the sample to fathers who were born in either the later or the early period (columns (3)–(4)).

Access to a broader talent pool for adopted heirs may differ across fathers' occupations. For example, business elites may use their business partners and extensive networks to identify talented heirs. In column (1) of Table 4, we include fathers' characteristics as a control variable. The result shows a coefficient of 0.042 and is statistically significant at the 5% level, which is not different from our baseline result.

Preferences for biological/adopted heirs may influence their decision to continue having children until a male heir is born. Such preferences toward heirs could potentially impact our IV results. To rule out this concern, we use the gender of the second-born child as

an instrument for *Adoptee dummy*, focusing specifically on fathers whose firstborn child is female. For those families, the preference for having a biological heir remains unchanged. Still, the likelihood of selecting an adopted son as an heir varies depending on the gender of the second-born child. Column (4) of Table A3 confirms that the relevant condition is satisfied. Column (2) of Table 4 shows a regression result that the elite persistence of adopted heirs is 2.4 percentage points higher than that of biological heirs. We conclude that the results are consistent with our main findings.

Since the inheritance law was enforced in 1898, fathers born during the early period were able to select their heirs without being influenced by this law. For robustness checks, we split our sample based on the fathers' year of birth, comparing those born later with those born earlier (columns (3)–(4) in Table 4). Among fathers born after the median, the adoptee dummy is 0.046, while for fathers born before the median, the result shows 0.033. Neither coefficient is statistically significant, and the difference between them is modest. This provides suggestive evidence that the Civil Code marginally strengthened the link between adoption and elite status. Consistent with Kurosu (2013), who documents the widespread role of adopted sons even in the Tokugawa period, the new law appears to have had only a limited additional impact on family formation and succession among elite families.

From the comparison between OLS and IV estimates, we find a negative bias in OLS. This implies that fathers who have a lower innate genetic ability prefer adopting a son outside the family over consanguineous relationships. Ignoring this "selection effect," the decision to adopt is likely negatively correlated with the family's innate ability.

6 Mechanisms

In this section, we provide insight into the adoption market that led to higher intergenerational elite persistence among adopted heirs compared to biological heirs. We mainly discuss four possible channels: (i) the quality of successful adopted heirs, focusing on the

income level of individuals, (ii) the type of families who may have better access to talented adoptees, (iii) the role of adoption in mitigating intergenerational skill mismatch, (iv) the elite networks between adoptive families and adoptees' biological families.

Quality of adopted heirs

In this section, we explore the possibility that adopted heirs increase the productivity of the family business. To do so, we examine whether our main results are driven by an increase in heirs outside or inside the top of the income distribution. For this analysis, we first exclude the heirs with top 0.1% income from our sample to examine how adoptees outperform biological sons. Column (1) of Table 5 shows that the point estimate for the adoptee dummy is small (0.026) and statistically insignificant. When we replace the dependent variable with a top income-rank dummy that takes unity if the heir is in the top 0.1% of income distribution, the coefficient is 0.029 and is significant at the 5% level. This implies that the heirs in the top 0.1% income distribution drive the adoptee premium in our main analysis.

Who Had Better Access to Talented adopted heirs?

To understand the advantages of adopted heirs, we examine how the size of the potential pool of adopted sons at a young age affects our main results. This exploration considers two factors: (i) fathers who have achieved great success at an early age, (ii) fathers who are likely to be recognized as potential elites from a young age (graduates of imperial universities, individuals from the samurai family, individuals in occupations with meritocratic selection). Fathers with these characteristics are more likely to have contact with other elites at a young age and thus have better access to good adopted sons when selecting heirs.

First, we focus on fathers listed in PIR at a younger age. Property accumulation and contributions to the local economy are key aspects of the selection criteria in PIR. From this perspective, it can be inferred that individuals listed in PIR at a younger age are likely to have achieved great success more quickly than those who become elites at an older age.

Consequently, these elites may have better access to high-quality adopted sons than those listed in the PIR at an older age. Columns (1)–(4) in Panel (a) of Table 6 split the sample by the age of the fathers listed in PIR.[23] The results show that adopted heirs only outperform biological heirs if they are very successful at an early age.

Second, we focus on fathers who graduated from imperial universities. These institutions were highly selective, admitting only a tiny fraction of the population, and played an important role in producing top elites (Moriguchi *et al.*, 2024). The education and networking opportunities provided by these universities could be a strong factor in pushing these graduates into higher positions in the private and public sectors. As a result, these graduates might be more likely to connect with top elites (not just imperial university graduates) at an early age than elites who did not proceed to imperial universities. This may expand the size of the potential pool of adopted sons, leading these adopted heirs to outperform biological heirs. Column (5) in Panel (a) of Table 6 supports this hypothesis. Although the coefficient is not statistically significant, its magnitude is greater than our main result (0.179 vs. 0.046).

Third, we focus on heirs from the samurai family. The advantages of local connections in samurai families, which were established during the 260-year Tokugawa period, may help individuals from samurai families have better access to quality adopted sons at a young age. For samurai father-heir pairs, the coefficient of adopted sons is positive and statistically significant at the 1% level (column (6) in Table 6). This result implies that fathers from samurai families could find high-quality adopted sons.

Finally, we show the results by father's occupation (panel (b) of Table 6). Among business elites (column (1)), even though the point estimate is statistically insignificant, the result suggests that business elites may have had better opportunities to adopt high-quality heirs. This finding is consistent with the literature, which shows that external succession outperforms within-bloodline succession in corporate management (for example, Burkart *et al.*, 2003; Bennedsen *et al.*, 2007; Mehrotra *et al.*, 2013; Chang and Shim, 2015). For central

[23]The age of first listing in PIR for each age percentile is as follows: 25th percentile: 50, 50th percentile: 58, 75th percentile: 64.

public servants (column (2)), the coefficient is positive and substantial (0.215). Entering into the higher civil service in prewar Japan typically required graduation from a top national university (e.g., an imperial university) and passing the higher civil service exam at a young age; therefore, these fathers were well-positioned to recruit, especially a good adopted son. Finally, in the military sample (column 3), adopted heirs have a higher probability of becoming elite than biological heirs (0.145). Since military servants often required graduation from military schools, considered prestigious higher education institutions in prewar Japan, these fathers likely had earlier and better opportunities to select talented adopted sons than fathers in other occupations.

The Role of Adoption in Mitigating Skill Mismatch

In the previous section, we showed that our main result is driven by matching high-quality adopted sons with fathers who were highly successful in their early lives. Why are adopted heirs of such high quality? One possible explanation lies in the higher return to human capital investment for an adoptee compared to a biological heir. This advantage may result not only from the ability to select talented adoptees but also from mitigating the skill mismatch between fathers and heirs in the intergenerational transfer of occupations.

During this period, Japan experienced a transition from a hereditary status system to a meritocratic society. However, family pressure or aspiration to maintain elite status within the same occupation may have constrained heirs in their occupational choices (Sonoda *et al.*, 1995; Ichimura *et al.*, 2024). In particular, a family selecting an adopted heir had strategic advantages. Before completing the adoption contract, families could evaluate whether the adopted heirs preferred to pursue the same careers as their adoptive fathers. Furthermore, pressure from the biological families of adopted heirs may have further reduced the likelihood of career divergence from their adoptive fathers. These advantages in the adoption process likely mitigate the potential for skill mismatches between fathers and adopted heirs, enabling adopted heirs to maintain elite status.

To check this, we examine the intergenerational transmission of occupation from fathers to their heirs. In this analysis, we focus on father-heir pairs where both individuals are listed in the PIR (4,677 pairs).

Figure 1 plots the share of father–heir pairs who have the same occupations between biological and adopted heirs. Among fathers who graduated from imperial universities, adopted heirs are roughly 14 percentage points more likely to graduate from imperial universities. This finding provides suggestive evidence that fathers who graduate from top national universities have better access to talented adopted heirs in terms of educational level. Turning to intergenerational occupational persistence, fathers in military service are notably successful in making their adopted heirs achieve elite positions within the military, with a difference of approximately 13 percentage points between adopted and biological heirs. For business elites and public servants, the differences are slightly smaller, around 2 percentage points for business elites and -3 percentage points for public servants. These results provide suggestive evidence that the results reported in Table 6, particularly for military servants, are driven either by skill matching between fathers and their adopted heirs or by skill transfers from fathers to sons. Overall, the additional analysis suggests that strategically recruiting talented adoptees and transmitting occupation-specific human capital within the family may increase the likelihood that adopted heirs retain elite status.

Elite Family Network

Sonoda *et al.* (1995), Kurosu (2013), Yonemura (2016), and Kumon (2025) give some evidence that elite families without a biological son are more likely to maintain their lineage by adopting a son from families of similar social rank during this period. This literature points to the role of adoption in the construction of familial ties between adoptive families and adoptees' biological families. In this sense, adoptees can benefit from two elite families, i.e., biological and adoptive families. To explore this possibility, we calculate the proportion of elites among adoptees' biological fathers. For this analysis, we match the adoptees' bio-

logical fathers with individuals' listing status in PIR using extensive name matching. Our analysis is based exclusively on adoptees listed in PIR. Out of 2,634 adoptees in our sample, 812 are listed in PIR. Of these, we identify the biological fathers' names for 74 individuals. We find that only 32 adoptees' biological fathers were listed in PIR, implying that 56.8% of elite adoptees came from non-elite families.

Although this figure might have a measurement error, the result indicates that adoption most often links elite adoptive families to non-elite biological families rather than constructing closed networks among elites. The high ratio of non-elite-oriented adoptees implies intergenerational upward mobility through adoption at the individual level. This result supports nurture over nature; being adopted by an elite family helps adoptees climb the social ladder. Thus, as a policy implication, expanding access to substantial assets, family businesses, and comprehensive educational resources for talented children who lack these resources may enhance social mobility.

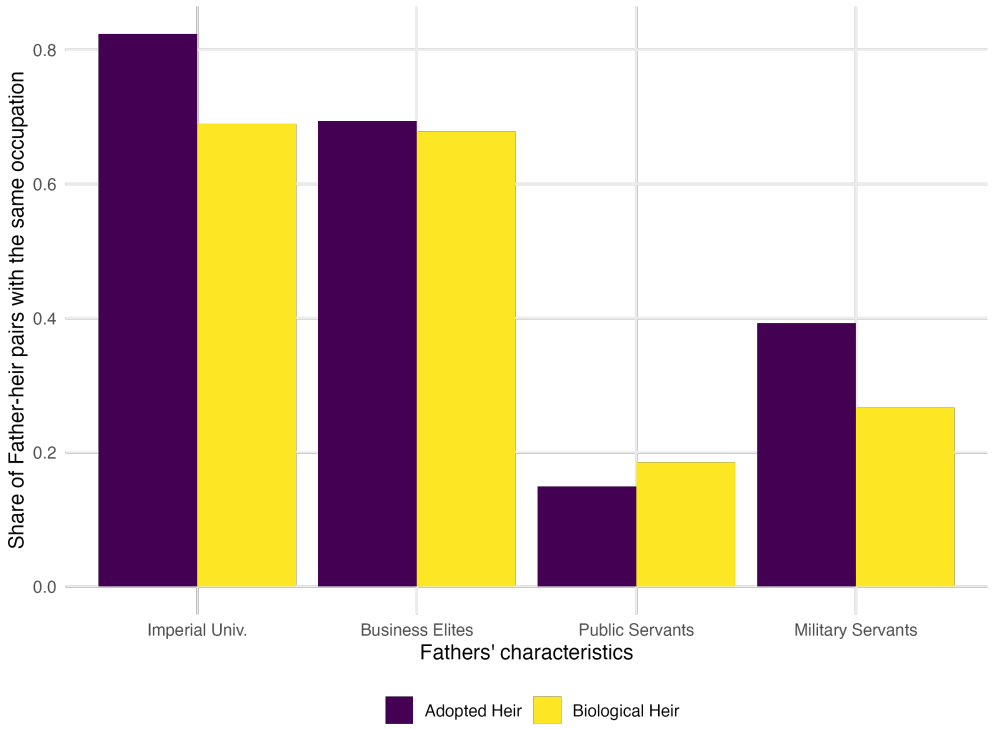
7 Conclusion

Why does the family maintain its social and economic status over multiple generations? We explore this question by focusing on elite families as they typically try to preserve or improve their social and economic status.

Leveraging a novel micro-level historical dataset from prewar Japan and exploiting the gender of the firstborn child as an exogenous source of variation in heir adoption, this study investigates the role of adoption in the intergenerational persistence of elite status. According to the inheritance law in prewar Japan, enforced at the end of the 19th century, family heads had exclusive rights to control the family's property and business operations. Under the inheritance law, adoptees served as an alternative way to secure an heir only when no male heir existed, primarily due to the legal constraints that made it difficult for females to become heirs.

Building on these institutional rules, we use the gender of the firstborn child as an instrument to isolate exogenous variation in the adoption decision. Our IV estimation results suggest that families with adopted heirs are approximately 27% more likely to become elites than those with biological heirs. In addition, we find that our main results are driven by an increase in elites in the top 0.1% income percentiles. The benefits of those high-quality adoptees are heterogeneous across fathers' characteristics. In particular, we find that fathers who have achieved great success at an early age and fathers who are expected to become elites from a young age have better access to good adopted sons. Furthermore, we provide suggestive evidence that the use of the adoption system mitigates the intergenerational skill mismatch by recruiting heirs whose skills and career trajectories closely match those of their fathers. Furthermore, we examine adoptees' advantages in familial ties with two types of families: biological and adoptive families. We reveal that 56.8% of listed adopted heirs originate from non-elite backgrounds, implying that adoption most often links elite adoptive families to non-elite biological families rather than constructing closed networks among elites. If anything, adoption can enhance intergenerational upward mobility at the individual level.

Figure 1: Intergenerational transmission of occupations from fathers to heirs



Note: This figure compares the intergenerational transmission of occupation from fathers to their heirs. In this analysis, we focus on father-heir pairs where both individuals are listed in the PIR (4,677 pairs).

Table 1: Descriptive statistics

	(1)		(2)		(3)		(2)-(3)
	All		Biological sons		Adoptees		
	N=25405		N=22771		N=2634		
	Mean	SD	Mean	SD	Mean	SD	Mean-Diff
Panel A: Key variables							
Firstborn child is female	0.44	0.50	0.39	0.49	0.80	0.40	0.41***
Being listed in PIR	0.17	0.38	0.16	0.36	0.31	0.46	0.15***
Panel B: Age at being listed in PIR							
Father's age at listed in PIR	57.48	10.22	56.81	10.13	63.27	9.11	6.46***
Father-heir age gap	30.17	6.32	30.54	6.02	26.94	7.82	-3.60***
Panel C: Family' characteristics							
Number of children	4.50	2.34	4.53	2.35	4.19	2.30	-0.34***
Panel D: Father' characteristics							
Business elites	0.54	0.50	0.53	0.50	0.59	0.49	0.06***
Central government servants	0.08	0.27	0.08	0.28	0.05	0.22	-0.03***
Military servants	0.05	0.23	0.06	0.23	0.04	0.19	-0.02***
IU grads.	0.14	0.35	0.15	0.36	0.04	0.20	-0.11***
Commoners	0.79	0.41	0.79	0.41	0.84	0.37	0.05***

Notes: The sample is a father-heir pair sourced from five editions of PIR. Column (1) shows the statistics on all families. These families are split into those with biological heirs (column 2) and those with adopted heirs (column 3). Column (4) presents mean differences between columns (2) and (3). All fathers in our dataset are listed in the first three editions of PIR (1903, 1915, and 1928). Panel A shows the key variables of our main analysis. "Firstborn child is female" is a dummy that takes unity if the firstborn child is female. "Being listed in PIR" is a dummy that takes unity if the heir is listed in any of the five editions of PIR. Panel B shows the ages of fathers, the ages of heirs listed in PIR, and their differences. Panel C shows the average number of children, including adoptees. Panel D provides the fathers' characteristics. "Business elites" include individuals who hold top positions in the business sector, such as CEOs or executives, defined by the title of the firms. "Central government servants" include high-ranking civil servants, politicians, and prefectural governors. "Military servants" include individuals who are high-ranking military servants. "IU grads." include those who graduated from imperial universities (top national universities). "Commoners" are the social group defined at the beginning of the Meiji period (1868–1912) that takes a value of one if fathers are commoners, and 0 if fathers are samurai or *Kazoku*. For a detailed description of the variables, see section 3. $^{***}p < 0.01$.

Table 2: Firstborn child gender and adoption

	(1)	(2)
	All sample	Families with two children
Dep.Var.	Adoption Dummy	
Firstborn child is female	0.153***	0.148***
	(0.007)	(0.007)
Constant	0.037***	0.042***
	(0.003)	(0.003)
Obs.	25405	23572
R^2	0.062	0.055

Note: We employ clustered standard errors at the prefecture–PIR edition levels in parentheses. We do not include any control variables in all columns. Column (1) shows the results using the full sample, while columns (2) exclude families having only one child from the sample. ***$p < 0.01$.

Table 3: Main results

	(1)	(2)	(3)
Model	OLS		IV
Dep.Var.	Heir is listed in PIR		
Adoptee dummy	0.033***	0.032***	0.046**
	(0.008)	(0.008)	(0.019)
Father's birth year	-0.014***	-0.012***	-0.012***
	(0.004)	(0.003)	(0.003)
Heir's birth year	-0.003	-0.004	-0.004
	(0.003)	(0.003)	(0.003)
Age Squared	Yes	Yes	Yes
Family size	Yes	Yes	Yes
PIR Edition dummies	Yes	Yes	Yes
Prefecture dummies	No	Yes	Yes
KP F-Stats	-	-	885
Obs.	25405	25405	25405
R^2	0.147	0.159	0.159

Note: We employ clustered standard errors at the prefecture–PIR edition levels in parentheses. Column (1) shows the correlation between the adoption dummy and elite status persistence, controlling for PIR editions in which fathers are listed and family size. Fathers' resident prefecture dummies are controlled in column (2). Column (3) shows the results of IV regression using the firstborn child's gender as an instrument for the adoption decision. ***$p < 0.01$, **$p < 0.05$.

Table 4: Robustness checks for sample selection

	(1)	(2)	(3)	(4)
Sample	With controls	Secondchild's gender	Father's birthyear > Median	Father's birthyear < Median
Dep.Var.	Heir is listed in PIR			
Adoptee dummy	0.042**	0.024	0.046	0.033
	(0.019)	(0.035)	(0.034)	(0.025)
Age Squared	Yes	Yes	Yes	Yes
Family size	Yes	Yes	Yes	Yes
PIR Edition dummies	Yes	Yes	Yes	Yes
Prefecture dummies	Yes	Yes	Yes	Yes
KP F-Stats	863	423	407	976
Obs.	25405	10425	12219	13186
R^2	0.160	0.179	0.104	0.101

Note: We employ clustered standard errors at the prefecture–PIR edition levels in parentheses. All regressions are based on IV specifications. Column (1) shows the results controlling for fathers' occupations. Column (2) presents the result when we restricted the sample to families with female firstborns and ran the IV regression using the secondborn child's gender as an instrument. Columns (3) and (4) compare the results by splitting the sample based on fathers' birth year. The median birth year of the fathers is 1872. $^{**}p < 0.05$.

Table 5: Elites among top income percentile

	(1)	(2)
Dep.Var.	Heir is listed in PIR (Excl. Top 0.1%)	Income level dummy Top 0.1%
Adoptee dummy	0.026	0.029**
	(0.020)	(0.013)
Father's birth year	-0.011***	-0.003**
	(0.002)	(0.001)
Heir's birth year	-0.007	0.002
	(0.006)	(0.001)
Age Squared	Yes	Yes
Family size	Yes	Yes
PIR Edition dummies	Yes	Yes
Prefecture dummies	Yes	Yes
KP F-Stats	151	139
Obs.	24057	25405
R^2	0.129	0.060

Note: We employ clustered standard errors at the prefecture–PIR edition levels in parentheses. All regressions are based on IV specifications. Column (1) excludes the heirs with top 0.1% income from our sample. Column (2) replaces the dependent variable with a top income-rank dummy that takes unity if the heir is in the top 0.1% of the income distribution. $^{***}p < 0.01$, $^{**}p < 0.05$.

Table 6: Heterogeneous effects

(a) Fathers' background

Dep.Var.	(1)	(2)	(3)	(4)	(5)	(6)
	Heir is listed in PIRs					
	Age of listed (Quantile)				Imperial	Father is
Sample	Top	Second	Third	Bottom	Universities	Samurai
Adoptee dummy	0.089*	0.062	0.039	0.005	0.179	0.183***
	(0.048)	(0.057)	(0.032)	(0.029)	(0.132)	(0.059)
KP F-Stats	226	108	348	517	63	211
Variable Mean	.09	.13	.19	.28	.07	.2
Effects (%)	98.7	46.8	20	1.9	238.5	92.2
Fathers' Age	-50	52-58	59-64	65-	All	All
Obs.	7193	6495	5413	6304	3589	5284

(b) Fathers' occupation

Dep.Var.	(1)	(2)	(3)
	Heir is listed in PIRs		
Sample	Business Elites	Public Servants	Military Servants
Adoptee dummy	0.037	0.215**	0.145
	(0.025)	(0.104)	(0.114)
KP F-Stats	717	100	74
Variable Mean	.17	.14	.15
Effects (%)	21.5	149.3	95.2
Obs.	13624	2016	1396

Note: All regressions are based on IV specifications. All control variables, father's residential prefecture dummies, and PIR edition dummies used in our main analysis are included in all panels. We employ clustered standard errors at the prefecture–PIR edition levels in parentheses. All specifications focus on the limited sample based on the fathers' characteristics. We evaluate the effects of adoption in percent (β / Outcome mean). ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

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A Appendix

A.1 Figures and Tables

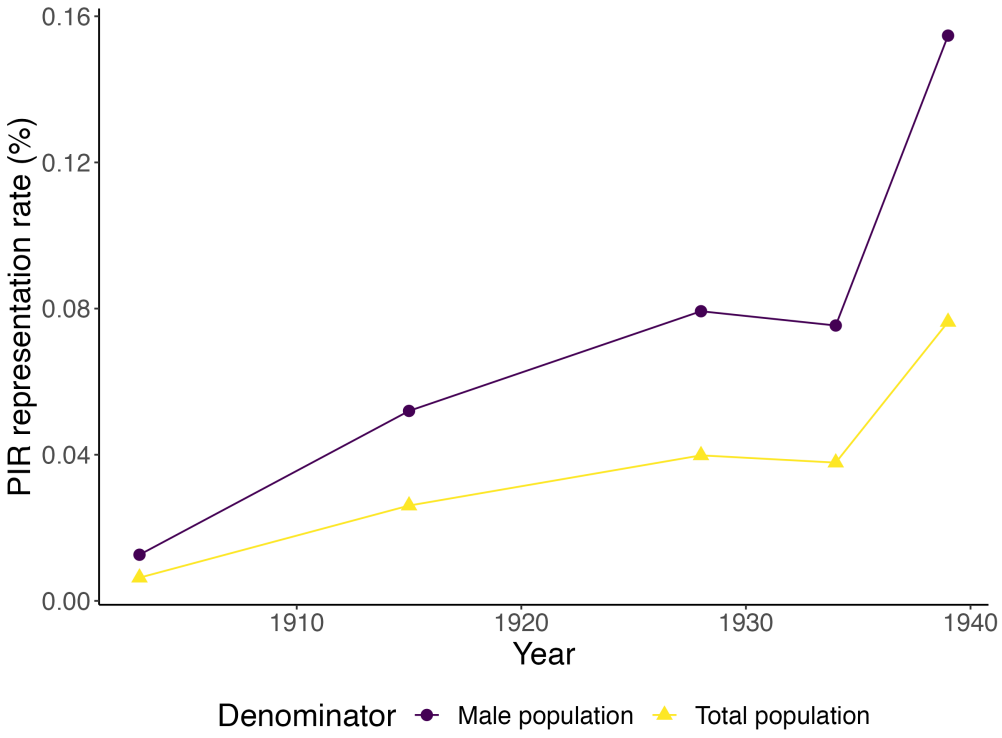

Figure A1: Elite listed rate

Note: This figure shows the PIR listing rate by editions. We use the estimated population by the Statistics Bureau of Japan. The purple line shows the number of listed people denominated by the total male population, and the yellow one is denominated by the total population.

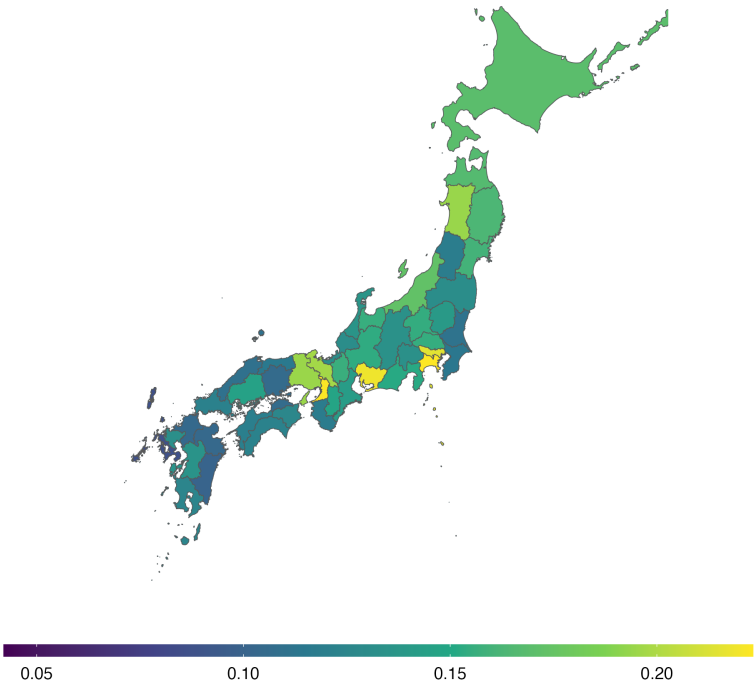

Figure A2: Probability of elite persistence by fathers' resident prefectures

Note: This figure depicts the portion of families that accomplish the elite status succession in 47 prefectures. Urban areas, such as Tokyo, Kanagawa, Osaka, Kyoto, and Aichi, show high values.

Table A1: Potential heir premium

	(1)	(2)	(3)
Dep.Var.		Listed in PIR	
Firstborn son or Adoptee	0.126***	0.124***	0.079***
	(0.011)	(0.011)	(0.010)
Controls	No	No	Yes
PIR Edition dummies	Yes	Yes	Yes
Prefecture dummies	No	Yes	Yes
Obs.	63877	63877	63877
R^2	0.075	0.082	0.149

Note: This table shows how the probability of being listed in PIR differs between sons with an inheritance right and those without. Only firstborn sons and adoptees have an inheritance right. As we set second-born sons or more as a comparison group, the coefficients measure the premium for potential heirs. Control variables include the father's characteristics, as in the main analyses. We employ clustered standard errors at the prefecture–PIR edition levels in parentheses. ***$p < 0.01$.

Table A2: Balancing test

(a) Family attributes and firstborn's gender

First child	Male			Female			
	N	Mean	SD	N	Mean	SD	Test
Father's birth year	14308	1871	12	11097	1870	12	F= 87.901***
Heir's birth year	14308	1900	13	11097	1902	13	F= 166.341***
Number of children	14308	4.2	2.4	11097	4.9	2.2	F= 551.682***
Business elites	14308	0.53	0.5	11097	0.55	0.5	F= 12.255***
Central public servant	14308	0.08	0.27	11097	0.078	0.27	F= 0.533
IU grads.	14308	0.14	0.35	11097	0.14	0.34	F= 3.524*
Military servants	14308	0.055	0.23	11097	0.055	0.23	F= 0.002
Commoner	14308	0.79	0.41	11097	0.79	0.41	F= 0.024

(b) Prefecture and PIR edition

First child	Male		Female		
	N	Percent	N	Percent	Test
Prefecture	14308		11097		X2= 6.315
... Aichi	516	4%	385	3%	
... Kanagawa	292	2%	264	2%	
... Kyoto	575	4%	420	4%	
... Osaka	1316	9%	996	9%	
... Others	8104	57%	6375	57%	
... Tokyo	3505	24%	2657	24%	
Edition	8280		6524		X2= 1.842
... 1st	543	7%	395	6%	
... 4th	3357	41%	2687	41%	
... 8th	4380	53%	3442	53%	

Note: Table (a) tests the mean differences in families' attributes between the families with male firstborns and those with female ones. Table (b) tests the differences in the share of families with a given attribute (prefecture and edition being listed). ***$p < 0.01$, **$p < 0.05$, *$p < 0.10$.

Table A3: First stage results

	(1)	(2)	(3)	(4)	(5)
Dep.Var.	Adoption Dummy				
Firstborn child is female	0.153***	0.214***	0.214***		
	(0.007)	(0.007)	(0.007)		
Second born child is female				0.200***	
				(0.010)	
Third born child is female					0.183***
					(0.009)
Controls	No	Yes	Yes	Yes	Yes
PIR Edition dummies	Yes	Yes	Yes	Yes	Yes
Prefecture dummies	No	No	Yes	Yes	Yes
Obs.	25405	25405	25405	10425	4393
R^2	0.068	0.221	0.225	0.381	0.512

Note: This table provides evidence of a positive association between the firstborn child's gender and the adoption decisions in columns (1)–(3). The evidence for the relevant condition in column (2) of Table 4 is shown in column (4). Column (5) restricts the sample to families whose first- and secondborn children are both female; fathers tend to adopt the son if they only have girls. We employ clustered standard errors at the prefecture–PIR edition levels in parentheses. ***$p < 0.01$.

Table A4: Robustness check for potential name mismatching

	(1)	(2)	(3)
Dep.Var.	Heir is listed in PIR		
Surname drop	N > 200	N > 100	N > 50
Adoptee dummy	0.046**	0.039*	0.048**
	(0.019)	(0.021)	(0.022)
Father's birth year	-0.012***	-0.012***	-0.011***
	(0.003)	(0.003)	(0.003)
Heir's birth year	-0.004	-0.005	-0.005*
	(0.003)	(0.003)	(0.003)
Age Squared	Yes	Yes	Yes
Family size	Yes	Yes	Yes
PIR Edition dummies	Yes	Yes	Yes
Prefecture dummies	Yes	Yes	Yes
KP F-Stats	869	827	791
Obs.	24162	22165	19175
R^2	0.159	0.159	0.160

Note: All regressions are based on IV specifications. We employ clustered standard errors at the prefecture–PIR edition levels in parentheses. Column (1) drops the families with Japanese major surnames ($N > 200$ out of 25,405 families). Columns (2) and (3) further exclude major surnames, $N > 100$ and $N > 50$, respectively. ***$p < 0.01$, **$p < 0.05$, *$p < 0.10$.

Table A5: Relevant factors to adoption decision

	Adoption Dummy	R^2
Father's birth year	-0.007***	0.063
	(0.000)	
Heir's birth year	-0.009***	0.102
	(0.000)	
Total number of children	-0.006***	0.014
	(0.001)	
Father is a commoner	0.035***	0.014
	(0.004)	
Father is a business elite	0.019***	0.013
	(0.005)	
Father is an IU grad.	-0.070***	0.018
	(0.005)	

Note: The number of observations is 25,405 in all regressions. We employ clustered standard errors at the prefecture–PIR edition levels in parentheses. ***$p < 0.01$.

A.2 Criteria of PIR

In this paper, we use "being listed in PIR" as a proxy for high social status. To understand the representation rate of each PIR among the population, we count the number of individuals listed in PIR and calculate the proportion of such individuals among the total population for each edition. As shown in Figure A1, the number of individuals who are listed in PIR grew over time, starting with 3,267 individuals in 1903 (about 0.01% of the population), increasing to 13,916 in 1915 (0.03%), 25,164 in 1928 (0.04%), 26,058 in 1934 (0.04%) and reaching 54,856 in 1939 (0.08%).[24] Based on the representation rate of PIR from 1903 to 1939, individuals listed in any five editions are within at least the top 0.1% regarding social status.

If the criteria for certain occupations expanded over time, our results in Table 1 might be potentially biased. For example, suppose the criteria for business elites expanded significantly. In that case, we might observe more occupational transitions from fathers who were public servants or military servants to sons who became business elites (Table 6).

To check this, we examine the differences in the share of each occupational elite between the fathers' and sons' generations. Column (1) shows the share of occupational elites listed in PIR published in 1903–1928. Column (2) shows the share of those listed in PIR published in 1934–1939. The former sample likely includes fathers used in this study, while the latter sample is more likely to include heirs used in this study. Panel A of Table A6 shows the share of samurai and commoners in each subsample, indicating a roughly 50% decrease in samurai representation. This result suggests a rise in commoner elites within one generation. Panel B of Table A6 then presents the share of elites across occupational categories. The descriptive statistics reveal that the share of each occupational elite is constant over time (business elites: 0.46-0.51, military servants: 0.05-0.06, public servants: 0.10-0.12). Our

[24] As noted in Masuda and Sano (2017), PIR may be a family-based survey, although the survey units are not explicitly defined. Calculating representation at the family level, the 1939 PIR covers about 0.4% of total families, the 1934 and 1928 PIR each cover about 0.2%, the 1915 PIR covers about 0.15%, and the 1903 PIR covers approximately 0.04% of families.

results indicate that the criteria expanded similarly across all groups (business elites, public servants, and military servants).

Table A6: Share of each occupational elite in fathers' generation vs. sons' generation

	Fathers (PIR published in 1903-1928)	Sons (PIR published in 1934-1939)
Panel A: Social group		
Samurai	0.27	0.14
Commoners	0.73	0.86
Panel B: Occupations		
Business Elites	0.51	0.46
Public Servants	0.10	0.12
Military Servants	0.06	0.05

Notes: This table shows differences in the characteristics of elites born in 1821–1860 (fathers' generation) and elites born in 1861–1890 (possibly sons' generation). Panel A shows the share of each social group. Panel B shows the share of each occupational elite. Since PIR lists all the job titles and past affiliations, the classification of occupations is not mutually exclusive.

A.3 Definition of elites' occupations

To capture the heterogeneity of intergenerational transmission of elite status across occupations, we categorize elites by three (mutually non-exclusive) occupation groups:

1. Business elites: Managers or above in large companies.
2. Public servants: high-ranking civil servants, politicians, and prefectural governors.
3. Military servants: high-ranking military servants.

We additionally categorize elites by income level, "Top 0.1% income earners" and "top 0.05% income earners." The top 0.1% income earners are individuals who earn more than the top 0.1% of the income distribution. Similarly, the top 0.05% income earners are individuals who earn more than the top 0.05% of income distribution. Appendix Table A7 summarizes the definitions.

Table A7: Definition of characteristics for individuals listed in PIR

Categories	Positions	Algorithm
Panel A: Occupation		
Business elites	Middle managers or above in large companies or executives in incorporated joint-stock companies	job title & affiliations
Top 0.1% income earners	Individuals who earn more than top 0.1% of income distribution	amount of tax
Public servants	High-ranking civil servants, politicians, and prefectural governors	job title & affiliations
Military servants	High-ranking military servants	job title & affiliations
Panel B: Social group		
Samurai	Samurai, local lords or court nobles in the Tokugawa period	title of social group
Commoners	Merchants, artisans, or farmers in the Tokugawa period.	title of social group
Panel C: Education		
Imperial Univ. Grads.	Graduates of top national universities	school name

Notes: The definitions of occupation refer to Moriguchi *et al.* (2024); Ichimura *et al.* (2024). Occupation, social group, education, and family headships are defined by the above algorithm in all the editions of PIR (1903–1939). Since PIR lists all the job titles and past affiliations, the classification of occupations is not mutually exclusive.