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How Are Bequests Divided? The Case of Japan[1]

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Abstract

This paper analyzes how bequests are divided and what determines the division of bequests among children in Japan using administrative data from inheritance tax returns filed during the 2014-21 period. We find that bequests in Japan are not divided equally among children and that males, especially eldest sons, tend to receive larger shares, even

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though the law dictates equal bequest division among children. This might be a vestige of social norms arising from Japan's traditional family system, the so-called *ie* system.

Key words: bequests, bequest division, estates, inheritances, *inter vivos* transfers, intergenerational transfers, gender, wealth, wealth inequality, Japan
JEL Classification Codes: D31, D62, D64, G51, J16

1. Introduction

Wealth inequality has attracted increasing attention in recent years as there has been a resurgence in wealth inequality since the 1980s in many parts of the world (e.g., Piketty, 2014; Saez and Zucman, 2016). Indeed, it is widely recognized that household wealth is distributed less equally than income or consumption expenditure (Davies and Shorrocks, 2000). Household wealth arises primarily from life-cycle saving and/or from transfers from others, including bequests and *inter vivos* transfers from one's parents (hereafter referred to collectively as intergenerational transfers). Davies and Shorrocks (2000) come to the conclusion that a reasonable estimate of the contribution of intergenerational transfers to aggregate household wealth is about 35-45% based on a review of the existing work on the relative importance of such transfers. More recently, Piketty (2011) shows that the importance of bequests has been on the rise in France since the 1950s with an acceleration of the trend during the past 30 years. Intergenerational transfers are therefore likely to play an important role in determining wealth accumulation and hence wealth inequality.

If intergenerational transfers matter for wealth inequality, it is important to know how wealth is passed on across generations. Do parents divide their bequests equally among their children? Do they leave more or all to a given child such as the eldest son? Do they leave more to sons than to daughters? These are important questions not only for their own sake but also because they have profound implications for the extent to which wealth disparities are passed on from generation to generation. Nevertheless, data limitations pose a significant challenge for analyzing the division of bequests. Given that bequest division takes place after the bequeather passes away, information on the actual division of bequests is hardly ever collected in household surveys. Moreover, while bequests tend to be left disproportionately by affluent households, such households are usually

underrepresented in household surveys. As a result, empirical work on the division of bequests remains limited, especially outside the United States (US).

The main aim of this paper is to fill this gap in the literature by examining how bequests are divided and what determines the division of bequests among children in Japan. The key contributions of this paper to the literature are twofold. First, this paper is the first paper ever written that uses administrative data from inheritance tax returns in Japan, which are collected by the National Tax Agency of the Government of Japan and provided by the National Tax College. The use of administrative data helps overcome the aforementioned data limitations and allows us to obtain a better understanding of bequest division in Japan. Doing such an analysis for Japan is meaningful because it is not clear a priori whether the previous findings for the US apply to other parts of the world, especially in Asia where the family as an institution may be different from what it is in the US. Second, this paper is one of the first to carefully analyzes the role of social norms relating to the gender and birth order of children in determining the division of bequests. The findings of our analysis have important implications not only for wealth disparities among siblings but also for wealth inequality more generally.

The rest of the paper is organized as follows. Section 2 describes the theoretical framework. Section 3 reviews the literature with particular emphasis on the empirical evidence on bequest division. Section 4 explains the Japanese context. Section 5 describes the data and estimation methods. Section 6 presents descriptive statistics as well as the estimation results. Section 7 summarizes the key findings and discusses some policy implications.

2. Theoretical Framework

How parents divide their bequests among their children is closely related to why they leave bequests. There has been extensive theoretical and empirical work on bequest motives.[3] Theoretical models of bequest motives can be grouped into three categories depending on whether bequests are assumed to be accidental, altruistic, or strategic. This section goes through these models and discusses their implications for bequest division.

[3] See, for example, Arrondel and Masson (2006) and Laferrère and Wolff (2006) for a comprehensive review of the literature on bequest motives.

The first category of models is an extension of the life-cycle model whereby parents are assumed to have no bequest motive. According to this model, because of uncertain lifetimes and precautionary saving for unforeseen income or health shocks, a positive amount of wealth may be left unconsumed and passed onto the next generation (Davies, 1981; Hurd, 1987, 1989). Since such bequests can be considered accidental or involuntary, the model does not offer any predictions about how they will be divided among children.

The second category of models is based on the altruistic model. This model assumes that parents are altruistic vis-à-vis their children and that they derive utility from their own consumption as well as from their children's consumption (Barro, 1974; Becker and Tomes, 1979; Becker, 1991). Altruistic parents are thus assumed to care about the welfare of their children and to use transfers to compensate for the lower earnings of their children and/or earning differences among their children. What this model implies for bequest division is that parents will divide their bequests unequally, leaving more to children with less resources of their own and/or less earnings capacity.

The third category of models is based on the strategic model whereby parents are assumed to leave a bequest only if their children provide something in return, such as providing care and financial assistance during old age or taking over the family business (Kotlikoff and Spivak, 1981; Bernheim et al.,1985; Cox, 1987). What this model implies for bequest division is that parents will divide their bequests unequally, leaving more or all of their bequests to children who provide something in return. Similarly, Chu (1991) constructs a theoretical model that assumes that parents care only about minimizing the probability of their family line becoming extinct, which is sometimes referred to as the dynastic motive. This model implies that the parents will leave their entire bequests to one child (e.g., the eldest son) because this is the bequest division rule that minimizes the probability of the family line becoming extinct.

This review of theoretical models of bequest motives shows that each model has different implications for bequest division, but, interestingly, none of the models presented thus far predicts the equal division of bequests. As the next section reveals, this is in sharp contrast to what empirical studies find. Empirical studies predominantly find that bequests tend to be divided equally, at least in the US where the majority of previous studies have been conducted thus far. Such an inconsistency is sometimes referred to as the "equal division puzzle." In recent years, a number of theoretical models have been proposed to explain this puzzle. For example, Stark (1998) constructs a theoretical model in which altruistic

parents choose to divide their bequests equally among their children because their children experience disutility if they receive a smaller bequest than their siblings (what Stark (1998) calls "relative deprivation").

Similarly, Bernheim and Severinov (2003) assume that each child's perception of parental affection directly affects his/her subjective well-being but that he/she cannot directly observe the parent's preferences as a result of an asymmetry of information and instead infers these preferences from the parent's actions. These assumptions imply that parents will divide their bequests equally in order to signal their altruistic preferences to their children. Conversely, Farmer and Horowitz (2011) show that equal division may result if there is an asymmetry of information in the opposite direction. They show that, if parents do not know for sure how much affection each of their children has for them and how willing each child is to relocate to be close to them, they may decide to divide their bequests equally.

The theoretical models put forward by Stark (1998) and Bernheim and Severinov (2003) might be considered as variations of the altruistic model whereas the model of Farmer and Horowitz (2011) might be considered as a variation of the strategic model. These more recent models can explain equal bequest division regardless of what they assume about parents' bequest motives.

Of the theoretical models reviewed in this section, which model applies in the case of Japan? Horioka (2014) conducts an international comparison analysis of bequest motives using data from the Preference Parameters Study of Osaka University, which was conducted in China, India, Japan, and the US. He finds that about 60% of Japanese respondents have no (or a weak) bequest motive (i.e., they are planning to leave bequests to their children only if there is something left over). This implies that a relatively large share of bequests can be considered as accidental in the case of Japan. In contrast, only about 30% of respondents have no bequest motive in the US. Horioka (2014) also finds that altruistic bequest motives are less common in Japan (34%) than in the US (67%) whereas the share of respondents with a strategic bequest motive (including a dynastic motive) is found to be relatively low in both Japan (6%) and the US (3%). Similar findings are obtained for Japan in Niimi (2019).

The fact that a relatively large share of parents have an altruistic bequest motive may explain the commonly obtained finding of equal bequest division in the case of the US if

we consider the theoretical models of Stark (1998) and Bernheim and Severinov (2003). As for Japan, given that bequests tend to be accidental, we cannot resort to theoretical predictions about bequest division, and how bequests are divided is an empirical question.

3. Literature Review

This section reviews the literature on bequest division with a focus on empirical studies. By far the largest number of studies have been conducted in the US. Looking first at studies for the US that use probate records or inheritance tax returns, Menchik (1980) analyzes probate records for the State of Connecticut and finds strong evidence of equal division with little evidence that sons or first-born or earlier-born children receive larger shares. Similarly, Tomes (1988) analyzes data on estates probated in Cleveland in the State of Ohio and finds that about 63% of estates are divided equally or approximately equally and that bequests are compensatory (i.e., more is given to poorer children) only when they are divided unequally. Using data from federal estate tax returns, Wilhelm (1996) also finds that the majority of wealthy decedents bequeath equally and that bequests are not compensatory.

More recent studies for the US have looked at data from household surveys. For example, Behrman and Rosenzweig (2004) find that the majority of parents divide their bequests equally using data from the Minnesota Twin Registry and that this tendency is observed throughout the income distribution, not just at the top of the tail where previous studies have focused. Dunn and Phillips (1997) analyze data from the Asset and Health Dynamics among the Oldest Old (AHEAD) survey and find that *inter vivos* transfers (mostly cash gifts) are given preferentially to poorer children but that bequests tend to be left to all children and are not compensatory. The unequal division of *inter vivos* transfers and the equal division of bequests are also found by McGarry (1999) using data from the Health and Retirement Study (HRS) and the AHEAD survey.

Some studies analyze data from household surveys to examine parents' intentions regarding bequest division. For example, Light and McGarry (2004) find using data on mother-to-child intergenerational transfers from the National Longitudinal Surveys of Young Women and Mature Women that only 8% of women intend to divide their bequests unequally and those who are planning to divide their bequest unequally plan to do so for altruistic, strategic, or evolutionary motives (i.e., the desire to perpetuate one's genes), with the last motive implying that more is left to biological children than to

adopted children or stepchildren. Based on data from the AHEAD survey, Norton and Van Houtven (2006) find that about 95% of respondents plan to divide their bequests equally and that their intentions are not influenced by whether or not they receive informal care from their children. However, they do find that, if a parent gives any *inter vivos* transfers at all, he/she is more likely to give them to children who provide informal care. Moreover, Francesconi et al. (2023) find using HRS data that nearly two-thirds of those with a will plan to divide their bequests equally but that more than one-third plan to divide their bequests unequally among their children, with the latter tendency being stronger for those with stepchildren and genetic children with whom they have little or no contact.

Thus, empirical studies for the US strongly suggest that bequests are divided equally although some studies find that *inter vivos* transfers tend to be distributed unequally (e.g., Dunn and Phillips, 1997; McGarry, 1999; and Norton and Van Houtven, 2006).

Turning to studies for other countries, the Royal Commission on the Distribution of Wealth (1977) analyzes a sample of estates probated in England and Wales in 1973 and finds that bequests are divided unequally in more than half of the cases, with the most favored child in two-child families receiving, on average, about 62% of the total bequest to children. In the case of Sweden, Ohlsson (2007) analyzes data on estate reports for 230 widows, widowers, and divorcees from the city of Stockholm and finds that only 7-25% of estates are unequally divided. Similarly, using administrative data on all Swedes who passed away during the 2002-04 period, Erixson and Ohlsson (2019) find that 14-16% of decedents divide their bequests unequally or roughly unequally. Although the number of empirical studies outside the US is limited, they suggest that the tendency toward the equal division of bequests appears to be weaker in the United Kingdom (UK) and to be somewhat stronger in Sweden than it is in the US. Erixson and Ohlsson (2019) explain that this may be partly due to the fact that parents are not allowed to completely disinherit their children in Sweden.

Turning finally to studies for Japan, Hamaaki et al. (2019) analyze data from the Family and Lifestyle Survey and find that the division of bequests at the time of the death of the surviving spouse (so-called secondary inheritances) deviates from equal division in about 70% of cases. Their empirical analysis of the determinants of bequest division among heirs shows that bequests are divided partly in accordance with dynastic and strategic motives but not in accordance with altruistic motives. For instance, they find that children who live with their parents (and presumably provide care to them) tend to receive a larger

share of the bequest, which suggests that bequests can be regarded as an implicit payment for care that children provide to their parents.

While Hamaaki et al. (2019) analyze data on actual bequest division, there are some studies that analyze parents' intentions regarding bequest division. For example, using data from the Comparative Survey on Saving in Japan and the US, Horioka et al. (2000) find that, among those who intend to leave a bequest to their children, about 47% of Japanese respondents plan to divide their bequests equally among their children, about 31% plan to leave more or all of their bequest to the child or children who take care of them, and about 8% plan to leave more or all of their bequest to their eldest child even if he/she does not take care of them whereas the corresponding figures for the US are about 87%, 3%, and 2%, respectively. Similar findings are obtained for Japan using data from a different survey in Horioka (2002). Thus, previous studies on both actual and intended bequest division suggest that the equal division of bequests is far less common in Japan than it is in the US.

Taken together, the empirical evidence suggests that equal division is the most common bequest division method in the US where most of the previous studies on bequest division have been conducted. As for other countries, the evidence is mixed. The tendency of equal division is also found in Sweden while it is less common in Japan and the UK. Note, however, that empirical evidence remains scarce outside the US. Moreover, in the case of Japan, Hamaaki et al. (2019), the only empirical study of actual bequest division, relies on a relatively small sample. The present study therefore aims to fill the gap in the literature by using data from inheritance tax returns filed during the 2014-2021 period.

4. The Japanese Context

This section briefly describes the Japanese context regarding inheritances focusing on transfers from parents to children.

Inheritance Law

The family law portion of Japan's prewar Civil Code, which was passed in 1898, stipulated that all parental assets would go to the eldest son and that all other children would receive nothing. By contrast, Japan's postwar Civil Code, which was passed in 1947, stipulates that all parental assets would be divided equally among one's children.

More specifically, according to the current Civil Code, in the case of the death of one of the spouses, the surviving spouse's statutory share is half of the estate of the decedent and the other half is divided equally among the children. In the case of the death of the surviving spouse, the estate is divided equally among the children. In either case, parents can divide their bequests among their children in a different way if they leave a will, but they cannot totally disinherit any of their children and need to leave each child at least one-half of his/her statutory share.

Inheritance Tax System

As far as the taxation system is concerned, Japan has an inheritance tax rather than an estate tax, meaning that the tax is paid by recipients of the inheritance rather than out of the estate of the decedent. Effective January 1, 2015, a number of changes were made with regard to inheritance and gift taxes pursuant to the 2013 Tax Reform that was part of the Comprehensive Reform of Social Security and Tax.[4] The most important revision was a reduction in the basic deduction of the inheritance tax by 40% from "50 million yen plus 10 million yen multiplied by the number of statutory heirs" to "30 million yen plus 6 million yen multiplied by the number of statutory heirs." For instance, if the decedent had a wife and two children, the number of his statutory heirs would be three and the basic deduction in this case would be 48 million yen (about US$320,000).[5] The deduction would have been 80 million yen (about US$533,000) before the revision. If the total value of the decedent's assets exceeds this amount, each of his heirs would be required to pay an inheritance tax on the taxable amount of wealth received unless they claim tax credits that reduce their tax liability to zero.[6] As part of the same reform, the number of tax brackets for the inheritance tax was increased from six to eight and the tax rate for the highest bracket (a taxable amount of 600 million yen (about US$4 million)) or more was increased from 50% to 55%.

As for *inter vivos* transfers, a gift tax is imposed on the value of such transfers in Japan. There is an annual exemption of 1.1 million yen (about US$7,000) per recipient. Effective January 1, 2015, the gift tax structure was revised so that, below a certain level, a lower

[4] This subsection is based mainly on Niimi (2019). See also Niimi (2023) for more details.
[5] Based on an exchange rate of US$1 = 150 Japanese yen.
[6] In Japan, the surviving spouse is entitled to a substantial tax credit of 160 million yen (about US$1.1 million) or the amount corresponding to his/her statutory share of the estate, whichever is larger. Minors under the age of 18 and those with disabilities are also eligible for a tax credit. Moreover, in Japan, there is a separate tax payment postponement system for business and agricultural assets that facilitates the succession of family businesses and farms.

tax rate applies to the children or grandchildren of the donor. On the other hand, the tax rate for the highest bracket (a taxable amount of 45 million yen (about US$300,000) or more) was raised from 50% to 55%. In addition, there are currently various tax exemptions for gifts from parents and grandparents that are used for housing acquisition, education, marriage, or childcare.

Note that the basic deduction of the inheritance tax was increased previously in 1988 in response to the sharp rise in asset prices. This resulted in a significant increase in the average amount of taxable estates and a reduction in the proportion of decedents with taxable estates in that year. The reduction in the basic deduction of the inheritance tax in 2015 can therefore be considered as a reflection of the government's desire to restore the deduction level to the level prior to the 1988 reform in the face of declining asset prices. In other words, the reduction in the basic deduction of the inheritance tax as well as the increase in inheritance tax rates in 2015 were implemented mainly to respond to the significant reduction in land values since the collapse of the bubble economy and to prevent the persistence of inequality. After peaking in 1992 (at about 346 million yen (about US$2.3 million)), the average amount of taxable estates declined steadily due in large part to the decline in land values since the collapse of the bubble economy, and it was just over 200 million yen (about US$1.3 million) in 2014.[7] As for the proportion of taxable estates, it reached almost 8% in 1987, but it had been just over 4% since the mid-2000s (4.4% in 2014). However, as a result of the inheritance tax reform that became effective on January 1, 2015, the proportion of taxable estates nearly doubled to 8.0% and the average amount of taxable estates declined to about 141 million yen (about US$940,000) in 2015.

In terms of comparisons with other countries, the share of wealth transfer tax (i.e., estate, inheritance, and gift tax) revenue as a percentage of GDP was about 0.51% in Japan in 2022.[8] Although this is lower than that in France (0.70%), Korea (0.68%), and Belgium (0.65%), it is higher than in other OECD countries. These figures indicate that wealth transfer taxes are not a major source of revenue in most countries. Moreover, a number of countries have repealed such taxes entirely since the 1970s, including Australia, Austria, Canada, New Zealand, Norway, and Sweden.

[7] The figures in this paragraph were taken from the Ministry of Finance (https://www.mof.go.jp/tax_policy/summary/property/e07.htm, accessed on February 2, 2025).
[8] The figures in this paragraph were taken from OECD Revenue Statistics (https://stats.oecd.org/Index.aspx?DataSetCode=REV, accessed on February 2, 2025).

Inheritance Customs

Japan's traditional family system (the so-called "*ie*" system) that dates back to the Edo Period (1603-1868) stipulates that the eldest son becomes the new household head, inherits the family estate, and carries on the family line after the death of the father. The Civil Code that was enacted in 1898 during the Meiji Period (1868-1912) incorporated this tradition and specified that the eldest son would receive the parents' entire bequest.[9] Hence, the social norm during this period was for the eldest son and his wife to live with his parents, to take care of his parents, and to receive his parents' entire bequest although this social norm was not necessarily adhered to universally. The same social norm continues to be followed to some extent even during the postwar period, but as noted earlier, the postwar Civil Code that was enacted in 1947 specifies that bequests be divided equally among one's children regardless of the gender or the birth order of the child. In this regard, the prewar social norm is in principle inconsistent with Japan's postwar Civil Code, and families cannot adhere to this norm unless the parents leave a will and/or all children other than the eldest son voluntarily relinquish their right to inherit. Partly as a result, prewar social norms have weakened over the course of the postwar period although they have not disappeared entirely.

Note, however, that in the case of Japan, it is uncommon for parents to leave a will. According to Hamaaki et al. (2019), less than 10% of decedents in Japan leave a will. Moreover, while the postwar Civil Code stipulates the equal division of bequests among children, in practice, the division of bequests is usually decided through negotiations among heirs and all heirs are required to agree to the distribution of the bequest before an inheritance tax return can be filed. Hence, the bargaining power of each heir is likely to play as important a role in bequest division as social norms and statutory shares, but it should be noted that the bargaining power of each heir itself may be influenced by social norms.

As noted earlier, Japanese parents tend to have no (or a weak) bequest motive and bequests are therefore likely to be accidental in the case of Japan. This implies that parents may have no strong opinion regarding how bequests should be divided among their children. If this is the case, heirs may follow what the Civil Code stipulates, leading to equal division among children. On the other hand, if social norms and/or the bargaining power of each heir matter for negotiations about bequest division, we may not observe

[9] See Ohtake (1996) and Hamaaki et al. (2019) for more details regarding inheritance customs in Japan.

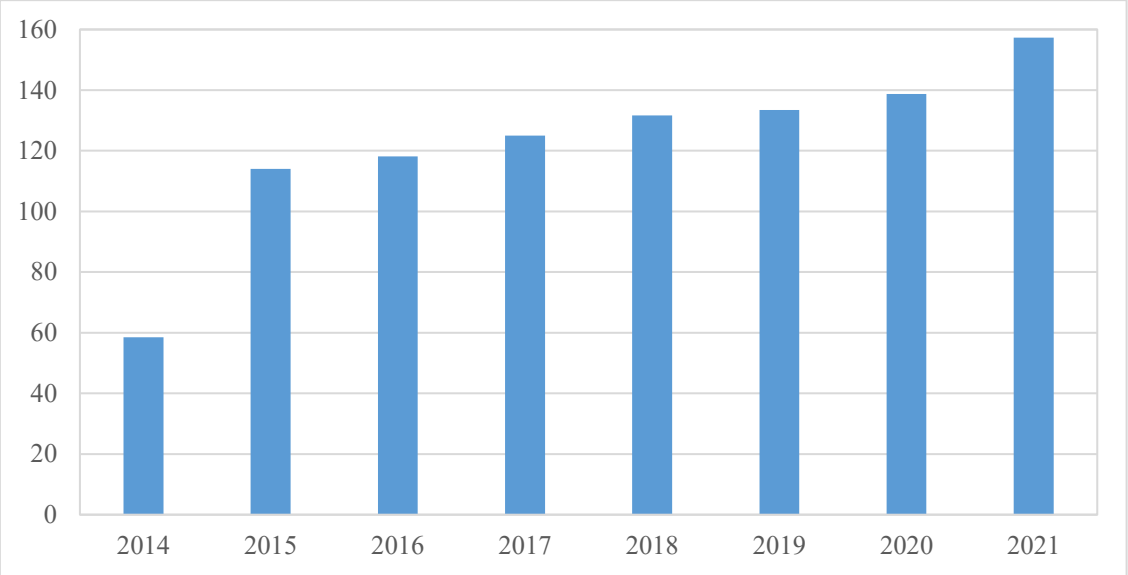
equal division despite what the Civil Code states. Thus, how bequests are divided among children and what determines how bequests are divided in Japan is an empirical question, and in the following sections, we present empirical evidence on these two issues.

5. Data and empirical methods

5.1 Data

For our empirical analysis, we use administrative data from inheritance tax returns filed during the 2014-21 period, which are collected by the National Tax Agency of the Government of Japan and provided by the National Tax College. During this 8-year period, a total of 1,309,750 inheritance tax returns were filed. However, there were cases in which multiple inheritance tax returns were filed for the same decedent either because multiple heirs filed separate returns or because the same heir filed multiple returns (the original return as well as revised returns). For the present analysis, we decided to analyze cases in which only one inheritance tax return was filed for a given decedent. After removing cases with inconsistencies, we were left with 976,915 cases.

Figure 1. The number of inheritance tax returns filed by year (in thousands)

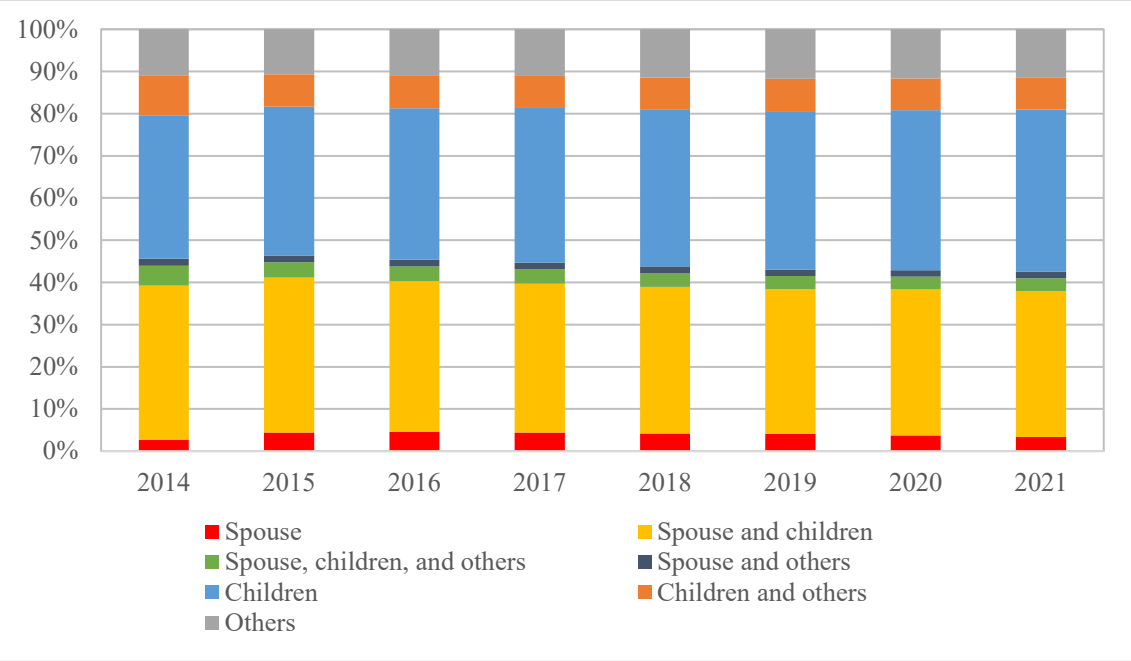


Source: Authors' calculations based on administrative data from inheritance tax returns collected by the National Tax Agency of the Government of Japan and provided by the National Tax College.

Figure 1 shows the number of cases in each year. There was a significant increase in the number of inheritance tax returns filed in 2015 because of the reduction in the basic

deduction of inheritance tax that was part of the 2013 Tax Reform that became effective on January 1, 2015, as explained earlier, and it has increased even further subsequently. As a result, the proportion of taxable estates, which was only about 4.4% in 2014, had increased to about 9.3% by 2021.[10] Note that in principle the administrative data that we use for our empirical analysis contain cases only for heirs who are liable for inheritance taxes after taking into account tax deductions and credits for which they are eligible.[11]

Figure 2. The composition of heirs by year



Source: Authors' calculations based on administrative data from inheritance tax returns collected by the National Tax Agency of the Government of Japan and provided by the National Tax College.

As for the composition of heirs, we do not observe any significant changes over time (see Figure 2). Cases in which only the surviving spouse and/or child(ren) were heirs constituted about two-thirds of all cases. Since the main aim of this paper is to examine how the estate of the decedent is divided among children, we include only such cases in our estimation sample. For the same reason, we exclude cases in which the number of statutory heirs excluding the surviving spouse is less than 2 and cases in which no child received any bequest even though their names were noted in the tax return documents. Furthermore, given that we are interested in how the gender and birth order of children

[10] The Ministry of Finance (https://www.mof.go.jp/tax_policy/summary/property/e07.htm, accessed on February 2, 2025).

[11] However, there were a certain number of cases each year whereby heirs filed inheritance tax returns even though they were not legally required to do so. As a robustness check, we ran a regression without such cases, but the results were largely unchanged.

affect bequest division among children, we also excluded cases in which such information as well as other required information were missing. Our final estimation sample consists of 540,747 cases with 1,216,323 children.

5.2 Estimation Methods

Since we are interested in examining how parental bequests are divided among their children, we disregard the share of the decedent's bequest that is received by the surviving spouse in the case of primary inheritances and define the actual share received by each child as the amount received by each child as a proportion of the total amount received by all children in the family. We then calculate the deviation ratio of each child's actual share from his/her statutory share (which is the reciprocal of the number of children since Japan's postwar Civil Code specifies equal division, as explained earlier). More specifically, child *i*'s deviation ratio is defined as:

$$deviation_{ij} = \frac{s_{ij} - \frac{1}{n_j}}{\frac{1}{n_j}} \tag{1}$$

where s_{ij} is the actual share of child *i* in family *j* in the total amount received by all children in the family and n_j is the number of statutory heirs (excluding the surviving spouse in the case of primary inheritances). Using this deviation ratio as our dependent variable, we estimate the following equation:

$$deviation_{ij} = \alpha + \beta X_{ij} + u_{ij} \tag{2}$$

where X_{ij} is a vector of the child *i*'s and his/her deceased parent's characteristics and u_{ij} is an error term. We estimate equation (2) using ordinary least squares (OLS), but since, by construction, $deviation_{ij}$ is truncated at -1, we also estimate a Tobit model. Given that siblings belonging to the same family are included in our estimation sample, standard errors are clustered at the family level.

Note that heirs are asked to indicate the number of statutory heirs in inheritance tax returns. We use this number (excluding the surviving spouse in the case of primary inheritances) when calculating $deviation_{ij}$. In Japan, if the decedent has one or more children, statutory heirs consist of the surviving spouse and his/her child(ren) in the case of primary

inheritances and of his/her child(ren) only in the case of secondary inheritances. To be precise, if a child had already passed away prior to the death of the parent, his/her child (i.e., the decedent's grandchild) is entitled to receive a share of the bequest in lieu of the deceased child and will be included in the number of statutory heirs. However, since we do not have detailed information about the identity of statutory heirs in the tax return documents, we assume throughout our analysis that all statutory heirs are the children of the decedent.

Our main variable of interest is a dummy variable that equals one if the child is the eldest child. We also include a dummy variable that equals one if the child is male and an interaction term between the eldest child and male dummy variables. If social norms still affect bequest division in Japan despite the revision of the Civil Code in 1947, we would expect the coefficients on all of these variables to be positive and significant. Given that we include an interaction term, the coefficient of the eldest child dummy indicates by how much the share of an eldest child who is a female exceeds the share of a female who is not an eldest child; in other words, it informs us of what the impact is of being the eldest child in the case of females. Similarly, the coefficient of the male dummy indicates by how much the share of a son who is not the eldest child exceeds the share of a daughter who is not the eldest child; in other words, it informs us of what the impact is of being a male in the case of children who are not the eldest child. Finally, the interaction term indicates by how much the share of an eldest child who is male exceeds the share of an eldest child who is a female; in other words, it informs us of what the impact is of being a son who is the eldest child relative to being a daughter who is the eldest child. Thus, the three coefficients will inform us of what impact gender and birth order have on each child's share.

We also include dummy variables that equal one if the child has only male or female siblings, respectively. The coefficients on these variables inform us how the gender composition of siblings affects bequest division among children.

In order to examine the implication of the parent's strategic motive, we include a dummy variable that equals one if the decedent and the child resided in the same prefecture and another dummy variable that equals one if the decedent and the child resided in the same municipality. The coefficient of the same prefecture dummy indicates by how much the share of a child who lives in the same prefecture but lives in a different municipality exceeds the share of a child who lives in a different prefecture whereas the coefficient of

the same municipality dummy indicates by how much the share of a child who lives in the same municipality exceeds the share of a child who lives in the same prefecture but in a different municipality. Thus, the total impact of living in the same municipality relative to living in a different prefecture can be calculated as the sum of the coefficients of the two dummy variables. Unfortunately, we have no information on whether the child coresided with the decedent or whether the child provided care to the decedent. We therefore use these geographical variables as a proxy for the amount of care the child provided to the decedent on the grounds that it will be easier for the child to provide care to the decedent if he/she lives closer to the decedent. If the parent has a strategic motive, we would expect the coefficients on these variables to be significant and positive.

We also include a dummy variable that equals one if the bequest is a secondary inheritance to examine whether bequest division differs depending on the presence of a surviving spouse. In the present analysis, we assume that the bequest is a primary inheritance if there is a surviving spouse among the heirs and that it is a secondary inheritance if there is no surviving spouse among the heirs. We acknowledge that there might be cases in which the surviving spouse's name does not appear in the tax return documents because he/she decided to voluntarily relinquish his/her right to inherit. Nevertheless, we believe that such cases are rare given that surviving spouses are entitled to a substantial credit against the assessed inheritance tax and therefore that the total inheritance tax burden can be reduced by leaving more to the surviving spouse. In addition to including a dummy variable for secondary inheritances, we also try estimating equation (2) separately for primary and secondary inheritances.

Additionally, we include quintile dummies for the total amount of the bequest left by the decedent to examine whether the size of the bequest affects each child's share. In addition to including quintile dummies in the estimation model, we also try estimating equation (2) separately for each quintile. Furthermore, we include dummy variables that equal one if the child is a minor, disabled, or took over the family business or farm. We identify children who are minors (disabled) by whether or not they claimed the tax credit for minors (the tax credit for the disabled). Furthermore, we identify children who took over the family business or farm by whether or not they inherited a positive amount of business or agricultural assets.

Lastly, we control for the age of the decedent and the child by including their ages and the square of their ages and for geographical and time variations by including dummy

variables for the region where the decedent resided and for the year in which the bequest took place.

6. Empirical Results

6.1 Descriptive Statistics

Table 1 presents descriptive statistics for the main variables used in the empirical analysis.

Table 1. Descriptive statistics

Variables	Mean	Standard deviation
Deviation	0.083	0.734
Child's (recipient) characteristics		
Eldest child	0.444	
Male	0.535	
Age	55.05	10.61
Age squared	3143.17	1096.46
Gender of siblings		
(mixed)	0.610	
Male only	0.232	
Female only	0.158	
Decedent's age	84.83	9.29
Decedent's age squared	7281.59	1501.19
Living in the same prefecture	0.754	
Living in the same municipality	0.539	
Secondary inheritance	0.521	
Took over the family business or farm	0.046	
Disabled	0.043	
Minor	0.001	
Number of observations	1,216,323	

Source: Calculations based on administrative data from inheritance tax returns collected by the National Tax Agency of the Government of Japan and provided by the National Tax College.

The mean of our dependent variable, which is the deviation ratio, is 0.08. To examine the likelihood of equal bequest division among children in more detail, Table 2 presents data on the percentage of children who received bequests according to their statutory shares.[12] It shows that, in the case of primary inheritances, only about 11% of children received

[12] To calculate the statutory shares used in Table 2, we use the number of children in the family whose names appeared in the tax return documents whereas we use the number of statutory heirs (excluding the surviving spouse in the case of primary inheritances) indicated in the tax return documents when calculating the deviation ratio defined in equation (1).

bequests that exactly equaled their statutory shares whereas the corresponding figure for second inheritances is even smaller (about 2%). This suggests that, despite the fact that the Civil Code stipulates the equal division of bequests among children in Japan, this is not commonly practiced in reality. Even if we use broader definitions of statutory shares, only about 28% and 21% of children received bequests according to their statutory shares in primary and secondary inheritances, respectively. Note, however, that bequests are more likely to be divided equally among children in the presence of a surviving spouse. These figures are in sharp contrast to what has been found in the US or Sweden. For example, in the case of Sweden where parents are not allowed to totally disinherit their children, as in the case of Japan, Erixson and Ohlsson (2019) find that only 14-16% of decedents divide their bequests unequally or roughly unequally (equal share ± 2%), which is considerably smaller than what we find for Japan. As for Hamaaki et al. (2019), they find that the actual division of bequests deviates from equal division in about 70% of secondary inheritance cases. We believe that equal division here refers to exactly equal shares but, since Hamaaki et al. (2019) use survey data, equal share in their case might be more in line with our broader definitions of equal division (i.e., equal share ± 5%). If that is the case, our figure for the prevalence of unequal division in the case of secondary inheritances (i.e., about 79%) is broadly consistent with Hamaaki et al.'s (2019) figure even though our sample consists only of relative affluent decedents who file inheritance tax returns whereas Hamaaki et al. (2019) use a broader sample.

Table 2. The share of children who received bequests according to their statutory shares (%)

	Primary inheritances	Secondary inheritances	Mixed siblings	Male only siblings	Female only siblings
Statutory share	10.71	1.84	4.87	6.29	10.99
Statutory share ± 2%	22.59	14.18	15.19	19.31	29.25
Statutory share ± 5%	27.87	21.05	20.69	26.12	36.85
Number of observations	563,471	606,246	741,964	247,316	180,437

Source: Calculations based on administrative data from inheritance tax returns collected by the National Tax Agency of the Government of Japan and provided by the National Tax College.

Table 2 also shows that bequests are more likely to be divided unequally among children with siblings of mixed gender than among those with siblings of the same gender. It is interesting to find that bequests are more likely to be divided equally among children who are all females. These findings suggest that, if there are sons in the family, they, particularly the eldest son, tend to receive more bequests than daughters. To investigate

this trend further, Table 3 shows the actual share of bequests among children by their gender for families with two children. It shows that sons indeed tend to receive more bequests than daughters even if they are not the eldest child. In other words, the gender of children seems to matter more than their birth order for bequest division in Japan.

Table 3. Average actual share of bequests in the case of families with two children (%)

Birth order and gender of children	Sons	Daughters
Primary inheritances		
Eldest son + son	50.00	
Eldest daughter + daughter		50.00
Eldest son + daughter	62.00	38.00
Eldest daughter + son	62.40	37.60
Secondary inheritances		
Eldest son + son	50.00	
Eldest daughter + daughter		50.00
Eldest son + daughter	58.88	41.13
Eldest daughter + son	60.11	39.89

Source: Calculations based on administrative data from inheritance tax returns collected by the National Tax Agency of the Government of Japan and provided by the National Tax College.

6.2 Estimation Results

We now turn to the estimation results. Table 4 shows the regression results that are obtained by OLS and Tobit. Given that we obtain similar regression results regardless of the estimation method we use, we focus on the OLS results in our discussions.

Table 4. Regression results

	OLS		Tobit	
	Coefficients	**S. E.**	**Marginal effects**	**S. E.**
Child's (recipient) characteristics				
Eldest child	0.109***	0.002	0.235***	0.002
Male	0.399***	0.002	0.518***	0.002
Eldest child*male	0.226***	0.002	-	-
Age	-0.009***	0.001	-0.008***	0.001
Age squared	3.36e-05***	5.97e-06	2.37e-05***	6.21e-06
Gender of siblings (mixed)				
Male only	-0.081***	0.002	-0.083***	0.002
Female only	0.340***	0.001	0.360***	0.001
Decedent's age	0.004***	0.001	0.004***	0.001
Decedent's age squared	2.13e-05***	6.82e-06	2.34e-05***	7.08e-06
Living in the same prefecture	0.044***	0.001	0.043***	0.002
Living in the same municipality	0.263***	0.001	0.271***	0.002
Secondary inheritance	0.036***	0.001	0.047***	0.001
Took over the family business or farm	0.506***	0.004	0.513***	0.004
Disabled	-0.005**	0.002	0.008***	0.002
Minor	-0.079***	0.008	-0.049***	0.008
Estate quintiles (1st quintile)				
2nd quintile	0.009***	0.001	0.015***	0.001
3rd quintile	0.005***	0.001	0.012***	0.001
4th quintile	-0.008***	0.001	2.28e-04	0.001
5th quintile	-0.047***	0.001	-0.035***	0.001
R^2/Pseudo R^2	0.203		0.097	
Number of observations	1,216,323		1,216,323	

Notes: *** and ** denote statistical significance at the 1% and 5% levels, respectively. Regional and year dummy variables are included in both regressions. Standard errors are robust standard errors clustered at the family level.
Source: Estimation based on administrative data from inheritance tax returns collected by the National Tax Agency of the Government of Japan and provided by the National Tax College.

As expected from the descriptive statistics, we find that daughters who are the eldest child are likely to receive a larger share of the bequest than other daughters, but the positive and significant coefficient on the interaction term between the eldest child and male dummy variables suggests that being the eldest child makes a bigger difference for sons than it does for daughters. Moreover, sons who are not the eldest child are likely to receive a larger share of the bequest than daughters who are not the eldest child, which provides further confirmation that gender matters[13]. Looking at the magnitudes of the various

[13] Note that since our dependent variable, the deviation ratio of each child's actual share from his/her

effects, the shares of daughters who are the eldest child are 10.9% higher than the shares of other daughters, *ceteris paribus*, the shares of sons who are the eldest child are 22.6% higher than the shares of daughters who are the eldest child, and the shares of sons who are not the eldest child are 33.9% higher than the shares of daughters who are not the eldest child. It thus appears that the quantitative impact of gender is much greater than the quantitative impact of birth order. Finally, we find that sons who have only male siblings are likely to receive a smaller share of the bequest when he has only male siblings than when he has siblings of mixed gender, and the opposite is true of female children. In other words, sons are better off in terms of their share of the bequest if they have sisters than if they have brothers.

As far as the strategic bequest motive of the decedent is concerned, we find that children who lived in the same prefecture as the decedent are likely to receive a larger share of the bequest than children who lived in a different prefecture and that children who lived in the same municipality as the decedent are likely to receive a larger share than children who lived in a different municipality within the same prefecture. These results seem to support the theoretical model of the strategic bequest model. Alternatively, given that bequest division tends to be decided through negotiations among heirs in Japan, having provided care to the decedent (which was proxied by having lived closer to the decedent) may give the child greater bargaining power in the negotiations.

As for the other regression results, we find that children are likely to receive a larger share of the bequest in the case of secondary inheritances than in the case of primary inheritances. Moreover, we find that the child is likely to receive a much larger share of the bequest than otherwise if he/she took over the family business or farm. This may be because the decedent wishes to reward the child who takes over the family business or farm with a larger share of his/her bequest and/or because business assets are largely indivisible, meaning that it is more difficult to divide the bequest equally if business assets are included in the estate. However, whether or not the child is a minor or disabled was found, if anything, to *lower* the individual's share of the bequest, *ceteris paribus*, and moreover, both effects were found to be statistically significant albeit small in absolute magnitude. If the decedent were altruistic, we would expect him/her to leave a larger share to disabled children whose earning capacity is presumably lower than that of his/her

statutory share, is based on the gross amount of the bequest. This implies that, for example, if parents left liabilities along with assets and if the eldest child, especially the eldest son, is the one who inherited these liabilities, his/her share of bequests in net terms might be smaller than what we present in this paper. Our results therefore need to be interpreted with caution.

siblings as well as to minor children who presumably require substantial educational expenses and whose future earnings capacity is uncertain. The fact that these predictions were not borne out by the results suggests that Japanese parents are not altruistic vis-a-vis their children.

Table 5. OLS regression results for primary and secondary inheritances

	Primary inheritances		Secondary inheritances	
	Coefficients	**S. E.**	**Coefficients**	**S. E.**
Child's (recipient) characteristics				
Eldest child	0.094***	0.002	0.123***	0.002
Male	0.456***	0.003	0.347***	0.003
Eldest child*male	0.201***	0.003	0.246***	0.003
Age	-2.77e-04	0.001	-0.010***	0.001
Age squared	-4.59e-05***	8.13e-06	4.13e-05***	1.05e-05
Gender of siblings (mixed)				
Male only	-0.147***	0.002	-0.019***	0.002
Female only	0.344***	0.002	0.336***	0.002
Decedent's age	0.008***	0.001	-0.002	0.002
Decedent's age squared	-1.46e-05*	8.46e-06	7.07e-05***	1.17e-05
Living in the same prefecture	0.040***	0.002	0.048***	0.002
Living in the same municipality	0.226***	0.002	0.296***	0.002
Took over the family business or farm	0.523***	0.005	0.490***	0.006
Disabled	0.019***	0.003	-0.032***	0.003
Minor	0.010	0.009	-0.093***	0.026
Estate quintiles (1st quintile)				
2nd quintile	0.011***	0.001	0.012***	0.002
3rd quintile	0.012***	0.002	0.002	0.002
4th quintile	0.003*	0.002	-0.014***	0.002
5th quintile	-0.036***	0.001	-0.055***	0.002
R^2	0.210		0.200	
Number of observations	582,468		633,855	

Notes: *** and * denote statistical significance at the 1% and 10% levels, respectively. Regional and year dummy variables are included in both regressions. Standard errors are robust standard errors clustered at the family level.
Source: Estimation based on administrative data from inheritance tax returns collected by the National Tax Agency of the Government of Japan and provided by the National Tax College.

To examine whether the determinants of bequest division differs between primary and secondary inheritances, we run regressions separately for these cases. The OLS results are reported in Table 5. As the table shows, the results are broadly similar. We also ran regressions separately for each quintile based on the total amount of the bequest left by

the decedent but the results do not change significantly.[14]

7. Discussion and Conclusion

In this paper, we analyzed how bequests are divided and what determines how bequests are divided among children in Japan using administrative data from inheritance tax returns filed during the 2014-21 period that were collected by the National Tax Agency of the Government of Japan and provided by the National Tax College. We found that bequests in Japan are not divided equally, and our regression results suggest that the gender and birth order of children matter for bequest division, especially gender. This is in sharp contrast to what is found in the US or Sweden where the equal division of bequests among children is prevalent.

Why do we find unequal bequest division in Japan even though the Civil Code stipulates equal division among children? As noted earlier, previous studies find that Japanese parents tend to have no or a weak bequest motive (e.g., Horioka, 2014; Niimi, 2019) and that a relatively large share of bequests are accidental for which theoretical models do not offer any predictions about bequest division. The fact that our regression results indicate that the gender and birth order of children play an important role in bequest division suggests that bequest division is, at least to some extent, affected by social norms in Japan. This might be via negotiations among heirs given that parents hardly ever leave a will in Japan. Moreover, given that our regression results showed that children who had lived in the same prefecture or in the same municipality as the decedent are likely to receive larger shares of the bequest seems to support the presence of strategic bequest motives. However, it is not clear whether this is because the decedent strategically allocated a larger bequest to children who provided care or because providing care to the deceased parent increased the bargaining power of the child in the negotiations about bequest division among heirs. Unfortunately, our data do not allow us to determine which of these two explanations is the correct one.

Note that social norms and the strategic bequest motives are inextricably linked. The fact that eldest children, especially eldest sons, receive larger shares of the bequest may be due not to social norms but to the fact that they provide a larger *quid pro quo*. For example, eldest sons may provide care and/or financial support to their parents before their death and/or take care of the family home and the family grave after their death.

[14] The full regression results by quintile are available upon request.

Nevertheless, the most noteworthy finding of our analysis is that males are heavily favored with respect to bequests despite what the Civil Code says. Unless social norms change toward greater gender equality within the household, it might be difficult to ensure equal bequest division in Japan.

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