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ABSTRACT

The Betrayed Generation? Intra-Household Transfers and Retirement Behavior in South Korea*

We consider the nexus of intra-household transfers, the sex composition of the sibship, and parental retirement behavior in Korea. We provide evidence that the cost of raising sons is higher than it is for daughters in Korea. Thus, in the absence of sufficient transfers from adult sons to parents, parents will fund their earlier investments in their sons by increasing their labor supply. Consistent with this, we show that parents with more adult sons delay their retirement. In particular, an elderly parent with all sons has a retirement probability that is 7–10 percentage points lower than a comparable parent with all daughters. Elderly parents also work between 1.8 and 2.7 hours more per week when their sibship consists of all sons. These effects are the most pronounced when the first born is a son, as well as for poorer households.

JEL Classification: J1, J13, J16, J26

Keywords: retirement, intra-household transfers, gender, sex ratios

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1. Introduction

Households transfer a vast amount of resources across generations. When children are young, parents typically invest in their education and other forms of human capital. As a result, net transfers to the very young tend to be positive in most societies. However, as children grow older, transfers to them usually decline and, by the time they are adults, transfers from parent to child can turn negative if adult children care for their elderly parents.

Transfers from grown children to their parents in old age are often viewed as a form of repayment called for by an implicit contract (Lillard and Willis 1997). Despite the prevalence of public and private pensions, as well as more advanced financial products, many elderly parents in certain parts of the world still rely on familial transfers from their grown children for consumption. This is particularly true in Asia, where familial transfers from grown children to their parents are much more prevalent than in other economies (Lee, Mason, and Park 2011).

There is a substantial theoretical literature that considers the motives for these transfers. Some of the earliest models in this literature considered altruistic motives in which parents transfer resources to their children simply because they wish to support their well-being (Becker 1974; Becker and Tomes 1976). In contrast, exchange models consider transfers as part of a quid pro quo. Specifically, intra-familial transfers are motivated by an expectation of compensation from the recipient at some later point. A consequence of this is that parents tend to transfer more to children with higher incomes (Bernheim, Shleifer, and Summers 1985; Cox 1987; Bernheim 1991; Lillard and Willis 1997). In such a model, security in old age is often a concern; parents invest in children with the expectation that those children will care for them when they are older.

However, the evidence on children providing care for elderly parents as a repayment for earlier investments is somewhat mixed and very much depends on context.[1] The practice is probably strongest in Asian countries, where there is evidence that adult sons tend to transfer more resources to their elderly parents than adult daughters (Yang 1996; Sun 2002; Lin et al. 2003; Kim 2010). This is consistent with an exchange model, since sons tend to receive more transfers

[1] There is a related literature that provides evidence that adult children care for their elderly parents with the expectation that they will receive larger bequests. For example, Horioka et al. (2018) show that children in Japan are more likely to live near their parents when they anticipate receiving a bequest. In a related study, Groneck (2016) uses exit surveys from the Health and Retirement Study in the United States and shows that caring for elderly parents is positively associated with higher bequests.

than daughters in Asian countries. However, in the United States, studies of the role of a child's gender on transfers to their parents show the opposite—namely, that American daughters are more likely than sons to provide assistance to aging parents (Coward and Dwyer 1990; Dwyer and Coward 1991; Stoller 1990; Shuey and Hardy 2003). This finding is less consistent with an exchange model since there are fewer gender disparities in child investments in the United States. Finally, an interesting study by Xie and Zhu (2009) shows that in urban China married daughters provide more financial support to their elderly parents than married sons do. They interpret this result as a reflection of the rapid disappearance of the traditional Chinese family model in which sons take on the bulk of the responsibility for supporting their elderly parents.

What this suggests is that, over the life course, net transfers from parent to child can be positive, negative, or zero depending on the prevailing social mores of a given society. In the case of positive net transfers from parents to their children, parents will require additional income to fund these transfers. Probably the most obvious source of increased income available to parents is at the extensive margin via delayed retirement or at the intensive margin via longer work hours. However, little is understood about the extent to which parents actually adjust their labor supply in response to changes in net transfers within the household.

There are two primary reasons for the paucity of work on this topic. The first is that often little is understood about the nature of net transfers within households. The second is that finding credible exogenous variation in intra-household transfers across households can be very difficult. As a consequence, the empirical question of how intra-household transfers affect parental labor supply is difficult to answer.

One area that can shed light on this question is the gender disparity in parental investments in children, which often stems from long-standing social mores. When parents do not or cannot manipulate the gender composition of their sibships, the relative number of boys and girls within a household can provide researchers with meaningful exogenous variation in intra-household transfers. Specifically, in societies with strong biases toward males, households with relatively more boys will tend to have more transfers from parents to young children. Depending on the extent to which grown children take care of their elderly parents, this can result in more net transfers from parent to child over the life course of the parents.

Economic links between parents and their sons are particularly pronounced in East Asian countries such as South Korea (henceforth Korea), China, and Taiwan. In these countries, parents typically allocate more financial resources and time to their sons and, especially, to the eldest son. This is usually due to a combination of prevailing social norms and, possibly, exchange considerations (e.g., Strauss and Thomas 1995; Black, Devereux, and Salvanes 2005; Booth and Kee 2009; Jayachandran and Kuziemko 2011; Wong 2013; Qian 2008; Barcellos, Carvalho, and Lleras-Muney 2014; Bu 2014, Choi and Hwang 2015).[2]

Korea provides a particularly interesting setting in which to investigate the effects of intra-household transfers on parental labor supply. First, in Korea, the period over which parents transfer resources to their children tends to be longer than in many other countries because parents tend to be involved in numerous aspects of their children's lives for a longer period of time. Consistent with an exchange model, parents often make long-term financial and time commitments with the underlying expectation of obtaining some sort of security in old age, typically from the eldest son (Choi and Hwang 2015). Second, Korea's elderly population has the second highest labor force participation rate among the Organization for Economic Co-operation and Development (OECD) member countries. The labor force participation rate of people age 65 or older was 31.3 percent in 2015; the average in OECD countries was 14.1 percent (OECD 2017a). Third, in spite of the high labor force participation rate of the elderly, older people in Korea tend to earn lower incomes. In fact, the poverty rate of those aged 65 or older was the highest among the OECD member countries at 48.8% in 2014 (OECD 2017b). In large part, this is the result of the National Pension Scheme (NPS), which provides little or no pension income to those who retired before the middle of the decade 2000–2010.[3] Moreover, many of Korea's elderly have insufficient private savings. In large part this is because of their

[2] For example, Strauss and Thomas (1995) find that girls in South Asia receive fewer nutritional, educational, and health inputs than boys. In India, Jayachandran and Kuziemko (2011) and Barcellos et al. (2014) document that boys receive more childcare time, vitamin supplements, and breastfeeding than girls. In China, Qian (2008) finds that an increase in relative female income in a household increases the survival rate of girls, whereas an increase in relative male income decreases the survival rate and educational attainment of girls. Wong (2013) shows that sons receive larger inter-vivo transfers and attain higher levels of education than daughters in Korea; the opposite is true in the United States.

[3] The first disbursement of normal benefits by the NPS was in 2008. Individuals who retired before 2008 received either no or substantially lower pension benefits than those who have retired since then.

large expenditures on their children's education or housing.[4] Finally, and as we will see, there is some indication that the implicit contract is eroding somewhat in Korea: many Koreans continue to invest in their children but receive less in return when they are older. Because of this, the older cohort of Koreans is sometimes referred to as the "betrayed generation." However, we will also show that this moniker can apply to all of the cohorts that we consider in this study.

In this study we estimate the effects of intra-household transfers on the labor supply of elderly Koreans. To do this we exploit the fact that intra-household transfers critically depend on the gender composition of the sibship in Korea. We employ the Korean Longitudinal Study of Aging (KLoSA) waves for the period 2006–2014. We find strong evidence that having more boys increases the labor supply of the elderly in Korea at both the intensive and extensive margins. We show that, conditional on the total number of children, families with all sons have a retirement probability that is seven to ten percentage points lower than families with all daughters. Similarly, one additional son lowers the likelihood of retiring by 3.4 percentage points. These effects are the most pronounced when the first born is a son. Our findings are robust to a number of different specifications. We provide evidence from the existing literature that parental transfers to children are higher when households have more boys. Moreover, further evidence of an eroded social contract indicates that much of this investment in children may not be recouped in older age. As a consequence, our results suggest that parents with greater numbers of boys need to work longer hours and later in life to fund the investments that they made in their children earlier in the life course.

Our work is closely related to a series of studies that investigate the effects of the gender composition of the sibship on labor supply earlier on in the life course as opposed to the latter part, which we consider. Specifically, Lundberg and Rose (2002) and Lundberg (2005) find that young fathers work longer hours in response to having a son rather than a daughter in the United States. The explanation that is offered for this finding is that boys increase the returns to marriage for fathers and that this provides a greater incentive for the father to invest in the marriage by working longer. Further evidence of this explanation from Morgan et al. (1988) and Dahl and Moretti (2008) shows that a higher number of boys reduces the probability that the

[4] Education expenditures on children accounted for 14.6% of total household consumption expenditures in 2014 (Park 2015).

parents will divorce (also in the United States).[5] A key difference between our work and these studies is that we argue that our effect operates primarily via the impact of social mores on the household's lifetime budget constraint, whereas Lundberg and Rose (2002) and Lundberg (2005) argue that the positive impact of sons on the labor supply operates via preferences.

The remainder of this paper proceeds as follows. In the next section we describe how intra-household transfers affect labor supply in a stripped-down lifecycle model. We then provide some evidence for why these transfers critically depend on the gender composition of the sibship in Korea. After that we discuss the data and the methods that we employ. We then present the results.

2. Intra-household Transfers

2.1 A Stripped-Down Model

In this section we present a simple framework in which we conceptualize how parental labor supply, intra-household transfers, and child gender are related. The model that we present focuses on the lifetime budget constraint rather than household preferences. The main reason for this focus is that, unless the gender of the children in the household affects the marginal utility of leisure, only the budget constraint will matter in determining the effects of the gender composition of the sibship on labor supply and retirement behavior.

The centerpiece of the model is the parent's lifetime budget constraint. We avoid the usual complexities of inter-temporal budget constraints and instead write it compactly as:

$$wL(g) + T^{C\to P}(g) = C + T^{P\to C}(g) \tag{1}$$

where w is the wage rate, $L(\cdot)$ is parent's labor supply, $T^{C\to P}(\cdot)$ are the financial transfers from child to a parent, C is parent's consumption (which we assume does not depend on the child's gender), $T^{P\to C}(\cdot)$ are the financial transfers from parent to child, and g is child's gender, which is unity if it is a son and zero if it is a daughter. In this model we do not make a distinction

[5] Pabilonia and Ward-Batts (2007) investigate the effect of the gender composition of the sibship on labor supply using the Current Population Survey. They find weak evidence (i.e., not statistically significant) in accord with Lundberg and Rose (2002) and Lundberg (2005), but they find that the opposite is true among Asian immigrants, for whom they suspect the son bias might be greater.

between labor supply at the intensive or the extensive margin, so we view $L(.)$ as a measure of total lifetime hours of labor. Theoretically, this distinction should not make a difference. However, in the empirical section, we do test for effects at both margins. Finally, and as intimated above, for ease of exposition, we only consider one-child households.

We can rewrite equation (1) as follows:

$$wL(g) = C + T^{P \to C}(g) - T^{C \to P}(g) \tag{2}$$

or

$$wL(g) = C + NetT^{P \to C}(g) \tag{3}$$

where $NetT^{P \to C}(\cdot)$ are the net transfers from parent to child. If we difference equation (3) across genders then we obtain that

$$L(1) - L(0) = \frac{1}{w}\left(NetT^{P \to C}(1) - NetT^{P \to C}(0)\right). \tag{4}$$

Equation (4) shows clearly how the gender of the child affects parental labor supply. Specifically, if $NetT^{P \to C}(1) - NetT^{P \to C}(0) > 0$, then we obtain that $L(1) - L(0) > 0$ so that parents must increase their labor supply to fund increased net transfers to their male children. Another implication of equation (4) is that the labor supply response needed to fund additional transfers to children will be dampened for higher-wage parents ceteris paribus.

However, we typically do not know how the gender composition of the sibship affects net transfers within the household. Hence we often do not know the sign of the quantity, $NetT^{P \to C}(1) - NetT^{P \to C}(0)$. To do this would require a comprehensive data set containing all lifetime transactions between parents and their children. Because such comprehensive data sets are difficult to obtain, we instead look at surveys, statistics, and related studies that enable us to reasonably determine the sign of $NetT^{P \to C}(1) - NetT^{P \to C}(0)$ in the Korean context. We discuss this evidence in the next subsection.

2.2 Gender Preferences and Parental Transfers in Korea

Korea has a strong history of preference for sons. One of the more unpleasant manifestations of this occurred with the advent of ultrasound technology in the year 1985. After this year, sex-selective abortions became common and remained common until ultrasound tests were banned in 1995 (Lee and Smith, 2018). It is widely believed that the new technology widened the sex ratio at birth substantially; it reached a peak of 116 boys to 100 girls in 1990. Subsequently, after ultrasounds were banned, the sex ratio declined and returned to a biologically normal level of 105 boys to 100 girls in 2014. However, other factors such as the development of the Korean economy and the improvement of women's socio-economic status most likely also contributed to this decline. The ban on ultrasounds was ruled unconstitutional in 2009 by Korea's Constitutional Court but, subsequent to the court's ruling, parents are able to learn the gender of their child only after 32 weeks of pregnancy, when abortions are very rare.

While the sex ratio at birth, one of the most prominent metrics of gender bias, is by and large normal in Korea currently, there are still many other important indications of differential investments in sons vis-à-vis daughters. Among these are: (1) educational investments; (2) contributions to children's marriage expenses; and (3) income transfers from adult children to elderly parents.[6] We provide evidence concerning each of these and discuss how each affects net transfers from parent to child.

Before we do this, it is important to provide some information on the cohorts that we are considering in this work. The mean birth years of fathers and mothers in our data are 1947 and 1949, and the mean birth years of sons and daughters in our data are 1979 and 1977. Thus the majority of the children in our study were enrolled in secondary or tertiary school sometime in the 1980s and 1990s. These children most likely married between the mid-1990s and mid-2010s. Finally, income transfers from children to elderly parents most likely occurred in the period after 2000.

2.2.1 Parental Investments in Education

Educational investments in children are very important to Korean parents, who typically spend a considerable amount of money on tuition, textbooks, private tutoring, and sometimes lodging (see Lee and Lee 2015, for example). Panels A and B of Figure 1 show the differences in school

[6]There is also differential investment in time use. For example, mothers of girls are more likely to return to work when their first-born child is female (Choi and Hwang 2015).

enrollment for boys and girls. In panel A we see a higher secondary school enrollment rate for boys than for girls that persisted throughout the 1980s.[7] Note that secondary enrollment rates were over five percentage points higher for sons than for daughters in 1981, which is substantial. We see in panel B that enrollments in tertiary education in the 1990s were higher for males than for females. These differences were on the order of about two percentage points throughout the decade. However, we see in panel A that secondary enrollment rates were roughly at parity across genders during the 1990s.[8] These differences suggest that there were substantially higher educational investments in sons than in daughters throughout the 1980s and 1990s. Choi and Hwang (2015) also found that monthly expenditures on private after-school education are higher for first-born boys than for first-born girls and that this disparity persists to today.

2.2.2 Support for Children's Marriage Expenses

Many studies have investigated gender differences in marriage expenses in the Chinese context. On the whole, these studies show that the groom's family pays a bride price that exceeds the value of a dowry (Brown, Bulte, and Zhang 2011; Wei and Zhang 2011; Zhang 2000). For example, Wei and Zhang (2011) find that the groom's family saves over a longer period of time than the bride's family and pays for the majority of the wedding costs. They also show the groom's family is mainly responsible for procuring a house for the newlyweds, which is a significant burden (Wei and Zhang 2011; Zhang 2000).

A similar tradition is observed in Korea, where marriage requires a large sum of money for housing, fixtures, the wedding ceremony, the honeymoon, and gifts. Of these, the costliest is housing. While it is true that many newlyweds rent apartments, doing so is still a financial burden due to Korea's unique renting system, *jeonse*, which requires a large lump-sum deposit up front.[9] In Korea, the costs of marriage are typically higher for sons than for daughters because, by Korean custom, parents are responsible for procuring housing for their newly married sons.

[7] Secondary school was not mandatory during this time.

[8] In Korea, secondary school became compulsory in 2004. Before then it was compulsory only in some parts of the country.

[9] *Jeonse* requires the tenant to make a deposit of approximately two-thirds of the property value for key money, which is then refunded once the lease expires. The landlord invests the deposit and keeps the interest earned. The tenant pays no monthly rent for the duration of the contract, which typically lasts for two years. Until recently, *jeonse* was traditionally much more popular than a monthly payment system.

Some studies have attempted to compute marital costs in Korea. According to Kim et al. (1994), the average cost of housing at marriage was $38,600 (in 1993 USD). They calculated that the groom's parents paid for 47.4 percent of this cost and the bride's parents for 10.4 percent, In addition, the National Survey on Marriage and Fertility Dynamics, a survey spanning the years 2010 to 2012 conducted by the Ministry of Health and Welfare and the Korea Institute for Health and Social Affairs (KIHASA), provides additional evidence on the cost of marriage (Kim et al. 2012). According to the survey, the groom pays, on average, $112,000 (in 2012 USD) upon marriage, with 42.7 percent of the total cost financed by his parents. In contrast, the cost of marriage for the bride was $33,700 (in 2012 USD) with 47.2 percent of this footed by her parents. In the same survey 75 percent of male respondents replied that the bulk of their marital costs were for housing. Table 1 provides some calculations from Lee (2011) showing that the groom's side pays approximately 80 to 90 percent of marriage expenditures. This is the case for all age groups in the study, which suggests that the tradition of the groom's side bearing the vast majority of marriage costs is still common. Taken together, these findings are strong evidence that the costs of marriage are substantially higher for sons than for daughters.

2.2.3 Financial Transfers from Adult Children to Elderly Parents

In countries with strong Confucian traditions such as Korea, intergenerational transfers in a household flow both downward (from parents to children) and upward (from adult children to their retired parents). Traditionally, sons (especially the eldest) typically have larger responsibilities to support their parents than daughters. Given this traditional relationship, there is a common view that elderly parents with sons are usually better supported financially. However, there are not many studies on this.

One of the few studies on the topic available in the Korean context is by Kim (2010).[10] Using data from the KLoSA, the author finds that adult sons provided $260 (in 2005 USD) per annum more net financial support to their elderly parents than daughters provided. However, the value of this annual difference is small in comparison with the parents' expenditures on education and marriage if they have more sons than daughters. Within the context of the exchange model of intra-household transfers, this suggests that, at least in the early 2000s, many parental

[10] In this study, children are defined as adults aged 19 or over who do not live with their parents and are not students at the time of the survey. The average age of parents is 69.5, and that of their children is 41.5.

investments in sons were not being fully paid back. One possible explanation for this small difference between sons and daughters is the fading of Confucian traditions among younger generation of Koreans.

Despite this, according to a survey conducted by the Korean government, elderly parents still expect more support from sons than from daughters after retirement. Specifically, the survey asked the question (translated from Korean), “Who should primarily support elderly parents?” Figure 2 presents the percentage of respondents who answered “the eldest son” in 1998 and in 2002 by age group. The figure suggests two important phenomena. First, all younger people are less likely to say that the eldest son bears the main responsibility of elder care, indicating an erosion of a core Confucian value among younger people. Second, the answers from 2002 indicate that the cohort that is just four years younger is even less likely to adhere to this value.

Other factors may be influencing sons’ willingness to provide the bulk of care for their elderly parents. For example, the 1990 revision of a civil law on inheritance may also matter. Prior to the revision of the civil law, the eldest son inherited most of his parents’ wealth. Moreover, even younger sons inherited more than daughters. Since the revision, however, all children were entitled to an equal inheritance regardless of their gender or birth order. The improvement of the socio-economic status of women could also be an important factor. For example, several studies argue that an increase in women’s earnings enhances women’s relative bargaining power in intra-household resource allocation (e.g., Manser and Brown 1980; McElroy and Horney 1981; Hoddinott and Haddad 1995; Thomas 1990; Chau et al. 2007). Women’s greater bargaining power may have increased daughters’ financial transfers to their own elderly parents rather than to their parents-in-law.

2.2.5 Theoretical Predictions

The evidence presented above suggests that parental lifetime net transfers to children are, on average, larger when parents have sons rather than daughters for the cohorts that we consider. The bulk of these transfers to sons seem to be accounted for by education and, especially, marriage expenses. Moreover, existing evidence suggests only a minor difference between sons’ and daughters’ provision of support for their elderly parents. This suggests that there has been an erosion of the implicit contract to some extent in recent years. Thus, according to our simple theory, having more sons should increase the parental labor supply and this effect should be smaller for richer households. In the remainder of the paper we provide some rigorous tests of this hypothesis.

3. Data and Estimation

3.1 Data

We primarily use the fifth wave of the KLoSA from 2014. However, we also use the first, second, and third waves to collect information on the respondents' job history. Focusing on a single KLoSA wave is important because the anecdotal evidence on the nature of net intra-household transfers that we presented earlier pertains to a particular cohort of adults who were born primarily in the 1940s and early 1950s. These are the average birth years of parents in the fifth wave of the survey. As we have shown, social mores have changed rapidly in Korea recently, so cohorts from earlier KLoSA waves may have been affected by different norms governing intra-household transfers.

The KLoSA is a biennial survey that began in 2006 and was created to provide researchers and policy makers with insights into aging issues in Korea. The baseline sample included 10,254 individuals who were age 45 or older in 2006. The survey consists of questions on demographic characteristics, health, employment, income, assets, and subjective expectations. Of the initial sample, 7,029 (2,987 males and 4,042 females) were present in the fifth wave. We restrict the samples to either retirees or people who reported themselves to be currently working in 2014.[11] We exclude people from the sample who were never in the labor force, and those who had the intention to work but were not currently working. The final sample consists of 4,375 individuals (2,596 males and 1,779 females). The mean birth year in the sample is 1947 with a standard deviation of 9.28 for males, and 1949 with a standard deviation of 9.01 for females; for children, the mean birth year is 1978 with a standard deviation of 9.37 for males, and 1977 with a standard deviation of 9.26 for females.

[11] In this study, we adopt the definition of retirement employed by the KLoSA, which is (1) having stopped income-earning activities, (2) presently not working or engaging only in pastime work, and (3) having no intention of engaging in anything more serious than pastime work as long as there is no special change in circumstances.

We report descriptive statistics for the variables used in this analysis in Table 2. Of the men in the sample, 41 percent were retired, with a mean age of 67. The mean retirement year was 2003 among men. Note that the variable "work status" is dichotomous, equaling one if the respondent is retired and zero if he is working. Of the women in the sample, 38 percent were retired and their mean age was 65. The mean retirement year was also 2003 among women. Among those who were working, the average number of hours worked per week was 44 for men and 40 for women. On average, both the male and female samples had 2.8–2.9 children. The ratio of sons to the total number of children is about 52 percent for both samples. The average age of the youngest child is between 35 and 36 in both the male and female samples. About 69 percent of children were married in 2014 (this is not reported in Table 2). Finally, we also report information on education, self-employment status, health, rural status, and assets in the table.

3.2 Estimation Model

To test the predictions of the theory, we consider variants of the following parsimonious empirical model:

$$y_i = \beta_0 + \beta_1 chgender_i + \beta_2 X_i + \varepsilon_i \tag{5}$$

where y_i is an outcome, $chgender_i$ is a measure of the gender composition of the sibship in the household, and X_i is a vector of potentially confounding variables. The outcomes that we consider are indicators for working, weekly working hours, and age at retirement. We employ the following measures of $chgender_i$: (1) the ratio of sons to the total number of children (while controlling for the total number of children), (2) the total number of sons and daughters, and (3) dummies for the gender of the child at each parity (while including dummies for the total number of children). We estimate Probit and Tobit models via MLE and linear models via ordinary least squares depending on the outcome variable. We compute robust standard errors for all estimations.

On the whole, we would argue that $chgender_i$ is largely exogenous, since it should be determined mostly by biological processes. Perhaps the biggest threat to the identification of β_1 is sex-selective abortion. It is true that several studies have found that having access to ultrasound technology can increase the number of sex-selective abortions (Kim 2005; Chen, Li, and Meng

2013). However, this is not likely a problem in this study since we focus on children who were born before the diffusion of ultrasound technology in the late 1980s.[12]

A final issue is that the gender of the first-born child may affect the parents' decision to have an additional child if parents have a strong preference for a boy or a girl (see, for example, Das Gupta 1987; Yamaguchi 1989; Dahl and Moretti 2008). Given families' preference for sons, girls will tend to live in larger households. As we will see, this is the case in the KLoSA data. It is important, therefore, to control for the total number of children in some capacity because this number should be systematically correlated with measures of the gender composition of the sibship. However, failure to do so should result in an underestimation of β_1 since having a higher percentage of boys would be correlated with smaller households, which should be associated with fewer transfers from parent to child.

4. Results

4.1 Impact on Retirement Behavior

First we consider the effects of the gender composition of the sibship on the decision to retire. For these estimations, we employ the variable *work status* from Table 2, which is a binary variable that is unity if the respondent is retired and zero if currently working. We consider the three different definitions of $chgender_i$ discussed earlier.

In Table 3 we present Probit estimates of equation (5) using the ratio of sons to the total number of children as the key independent variable. The first specification includes only the total number of children and parent's age as controls, while the second specification additionally includes controls for education, marital status, employment status, employment status of the spouse, health status, rural residence, the age of the youngest child, and household net assets. In the first two columns of the table we report results from the more parsimonious specification for men and women; we see that, conditional on the number of children in the household, moving from all daughters to all sons decreases the probability of the parents' retirement by 11.5 and 8.5 percentage points (PP) for men and women, respectively. The unconditional probability of retirement from Table 2 is roughly 40 percent for both genders, about a 28 percent decline for

[12] In Korea, sex-selection technologies such as ultrasound tests were introduced in the early 1980s, and their diffusion was completed by the late 1980s (Lee and Lee 2015).

men and a 22 percent decline for women. In the next two columns of the table we include all of our control variables, and we see that the estimates of the coefficients on the son ratio variable are somewhat attenuated but remain significant and economically meaningful. The point estimates move from 11.5 to 9.8 PP for men and from 8.5 to 7.1 PP for women. The decline in these estimates is mostly attributable to the controls for self-employment and living in rural areas. Both of these variables are correlated with larger families, which is correlated with fewer boys. In our data, the correlation between the number of children and the ratio of boys is –0.229. Once again, this is consistent with the result discussed in Yamaguchi (1989) in which girls may live in larger households if there is stopping fertility behavior (i.e., parents do not stop having children until they have a boy).

In the final four columns of the table we include an interaction between log household assets and the son ratio. This interaction allows us to test the implication of the stripped-down theory that the impact of the son ratio is dampened for wealthier households.[13] While the interaction terms are not individually significant, they are the opposite sign of the estimate of the coefficient on the son ratio. This means that the effects of the son ratio are stronger for poorer households. Note that these interaction effects are substantially larger for mothers than they are for fathers. This suggests that female labor supply is more important in offseting the costs of sons in poorer households.

To rigorously test if the impact of the son ratio is larger for poorer households, we computed F-statistics of the null that the son ratio and its interaction with household assets are jointly significant. In the more parsimonious specifications in columns five and six, the two estimates are jointly significant at the 1 and 5 percent levels for men and women, respectively. In the final two columns the p-values on the F-statistic are 3.16% and 13.64% for men and women, respectively. Accordingly, the impact of sons on retirement behavior is larger for poorer households.

One threat to the validity of the estimates in Table 3 occurs if the son ratio can somehow be manipulated. We argued that, in the Korean context, the son ratio was primarily manipulated via

[13] Strictly speaking, the model says that the effects of the son ratio are lower for households in which wages are higher. However, in the model there is a one-to-one relationship between the wage and the household's lifetime wealth. Accordingly, using household wealth is an appropriate means of testing the theory.

sex-selective abortion, which became possible in 1985 when ultrasound technology was introduced. To shed light on this, we estimated the models in the first four columns of Table 3 with the restriction that we only used households with children born before 1985. The results are reported in Table A1. We see that the results are not affected, which indicates that sex-selective abortions do not affect our estimations.

In Table 4 we consider a slightly different specification in which we employ the total number of sons and daughters rather than the ratio of sons as our way of operationalizing $chgender_i$. We report two estimations for men and women, each having all of the control variables from the last two columns of the previous table. We see that, for both men and women, an additional son reduces the probability of retirement by 3.4 PP. The point-estimate for men is significant at the 1 percent level, and the estimate for women is significant at the 10 percent level.

Next we investigate if the effects of child gender on retirement behavior vary according to birth order. There is an extensive albeit conflicted literature that has explored birth-order effects on child education and health outcomes in developed countries (e.g., Hauser and Sewel 1985; Kessler 1991; Black et al. 2005; Wang et al. 2007; Booth and Kee 2009; Bu 2014; Lundborg, Nilsson, and Rooth 2014). Several studies have proposed some underlying mechanisms for various birth-order effects, including time constraints, disciplinary restrictions, and endowment effects (e.g., Price 2008; Hotz and Pantano 2015; Black et al. 2005). However, and particularly in Asia, the eldest son may receive more investments from parents for the reasons discussed above. Moreover, if the implicit contract between parents and the eldest son has eroded, then parents with a first-born child who is a son may retire later since their investments may not be fully repaid.

In Table 5 we report the effects of the gender of the child at each parity on the parents' retirement behavior. As in the previous table, we report one estimation for men and women, each including all of the controls from columns three and four of Table 3. Note that all estimations include dummies for the total number of children. The results indicate that the first born child has the largest effect on retirement behavior. In particular, having a first-born son reduces the probability of retirement by 4.1 and 4.9 PP for men and women, respectively; both estimates are significant at the 10 percent level.

4.2 Impact on Labor Supply at the Intensive Margin

The theory is agnostic about whether parents will fund net transfers to their children by increasing the labor supply at either the intensive or the extensive margin. In the previous subsection we provide evidence for the former. However, it is also possible for parents to fund their investments by working more intensively in a given week. To shed light on this, we estimate a Tobit variant of equation (5) with weekly working hours as the dependent variable. We estimate the model for men and for women, again using all of the control variables from the third and fourth columns of Table 3. Note that, per Table 2, the average of weekly working hours is 44.0 and 39.8 for the males and females, respectively.

We present one set of results in Table 6 in which we use the ratio of sons to the total number of children as the measure of the gender composition of the sibship. The results indicate that moving from a sibship with all daughters to all sons increases weekly working hours by about five for both fathers and mothers. Both estimates are significant at the 5 percent level.

Next, in Table 7, we employ the total number of sons and daughters as our main explanatory variables. We see that an additional son increases weekly working hours by 1.8 and 2.7 hours for fathers and mothers, respectively. Again both estimates are significant at the 5 percent level. Note that, in contrast to the results at the extensive margin, the effects are stronger at the intensive margin for mothers. This is the case in both Tables 6 and 7.

4.3 Impact on Age at Retirement

Finally, we estimate a variant of equation (5) using the age at retirement as the dependent variable. In these estimations we pool mothers and fathers because the sample sizes for this dependent variable are smaller. We employ the three measuers of $chgender_i$ discussed earlier. The total number of observations for these estimations is 2,310, with 1,338 males and 972 females. The mean age at retirement is 60.2 for the entire sample, 62.3 for fathers and 57.2 for mothers. Once again, all estimations include the comprehensive set of controls that the earlier estimations included, with the addition of a dummy variable for gender.

We report the results of three estimations, each using a different measure of the gender composition of the sibship in Table 8. In the first column we employ the ratio of sons. We see that moving from a sibship with all daughters to all sons increases the retirement age by 1.5 years and that this effect is significant at the 5 percent level. In the next column we employ the total number of sons and daughters. Adding another son to the sibship increases the retirement age by 0.7 years; this estimate is significant at the 1 percent level. As before, there are no significant effects for the number of daughters. Finally, in the third column, we include dummy variables for the gender of the child in each birth position. We see that having a first-born son increases the retirement age by 0.7 years. This estimate is larger than the estimates for younger children, but the estimates for younger children still remain economically meaningful. Hence, as before, first-born sons have the largest effects.

As already discussed, social mores concerning who should care for elderly parents appear to be changing in Korea. Evidence for this is provided in Figure 2. This suggests that the effects of son ratios on retirement behavior might be muted in older parent cohorts if these cohorts receive more transfers from their adult sons than younger parent cohorts do. To test this, we estimate the same models as in Table 8 except that we restrict the sample to parents born before 1940.[14]

We report the results in Table 9. The estimates are very similar to those in the previous table, which indicates that the effects of son ratios on retirement behavior are not confined to younger cohorts. Accordingly, while social mores do appear to be changing in Korea, at least according to some surveys, both the older and the younger households in our sample require later retirements to fund the costs of having sons. What this indicates is that, despite an ostensibly stronger belief that the eldest son should care for his elderly parents, there were still very strong impacts of son ratios on the retirement behavior of older cohorts.

4.4 Discussion of Results

As discussed earlier, Lundberg and Rose (2002) and Lundberg (2005) show that in the Panel Study of Income Dynamics having more boys is associated with increased labor supply among younger fathers. However, Pabilonia and Ward-Batts (2007) do not find strong evidence of this in the Current Population Survey. Lundberg and Rose (2002) and Lundberg (2005) argue that

[14] Note that this type of exercise will not be effective with the specifications from Table 3 since most parent cohorts born before 1940 are retired. This lack of variation in the dependent variable for these cohorts results in an under-powered test. Accordingly, we use the specifications from Table 8, which rely on retrospective measurements of the individual's retirement age.

differential returns to schooling across genders or demonstration effects cannot explain their findings. Ultimately, the authors opt for a preference-based explanation in which sons increase the returns to their parents' marriage. If men prefer spending time with sons more than they do with their daughters, then the returns to the marriage increase. Evidence for this is provided by Morgan et al. (1988), who find that having a son increases the probability that the parents' marriage will survive by approximately 7 PP. Similar evidence exists from Dahl and Moretti (2008). Importantly, however, Pabilonia and Ward-Batts (2007) show that the effect of boys on fathers' labor supply is actually negative among many immigrant groups, including Asian immigrants, among whom one would expect the son preference to be stronger.

In our context we argue that the effects of the gender composition of the sibship on retirement operate primarily through budget constraints, not preferences, as in the model described earlier in the paper. If preferences were more important than the lifetime budget constraint in our context, because of the timing of our effects, fathers would have to delay their retirement with the intent of lowering the probability that they will divorce and making it possible for them to spend more time with their adult children once they do retire. First, this line of reasoning is not plausible because there are no custody issues involving adult children. Second, in contrast to Lundberg and Rose (2002), we provide evidence of the effects for both mothers and fathers. The budget constraint in our model is a household constraint and so should affect both mothers and fathers, whereas the preference story only affects fathers' labor supply.

5. Conclusions

In this study we investigate the relationship between the gender composition of a household's sibship and the retirement behavior of Korean parents. We argue that, in households with relatively more sons than daughters, net intra-household transfers from parent to child are higher. In particular, in Korea, parents are expected to provide housing for their newlywed sons. We argue that this is one of the largest expenses associated with having sons. We also provide anecdotal evidence that an implicit contract requiring sons, particularly the eldest son, to care for their elderly parents is eroding. To fund the high transfers to sons, therefore, parents with relatively more sons will need to work longer hours and retire later.

Using the Korean Longitudinal Study of Aging and some simple econometric models, we provide strong evidence that, conditional on the total number of children, parents with relatively more sons work more at both the extensive and intensive margins. Having one additional son decreases the probability of retirement by 7 percentage points for mothers and 10 percentage points for fathers and increases the number of weekly hours worked by 2.7 for mothers and 1.8 for fathers. Also, an additional son delays retirement by roughly 0.7 years. We find no significant effects of additional daughters. The effects are the most pronounced for the eldest son. We argue that these effects are primarily related to the household's budget constraint.

These findings indicate that long-standing preferences for sons in Korea, in conjunction with fewer resources flowing from adult children to their parents, have affected the retirement bevaior of elderly Koreans. Indeed, we provide evidence from surveys that fewer Koreans adhere to the traditional Confucian belief that the eldest son bears the main responsibility of caring for his elderly parents. However, despite this evidence, we also show that the effects of son ratios on retirement are equally strong for both older and younger cohorts, which is not consistent with an erosion of the social contract, at least among the cohorts that we consider in this study. Rather, it indicates that for *all* of the cohorts in our sample, children, and especially sons, were not fully repaying their parents' investments in them from earlier in the life course. Thus it appears that there is a betrayal of the older generation by all of the younger generations in this study, not just the youngest.

Compliance with Ethical Standards

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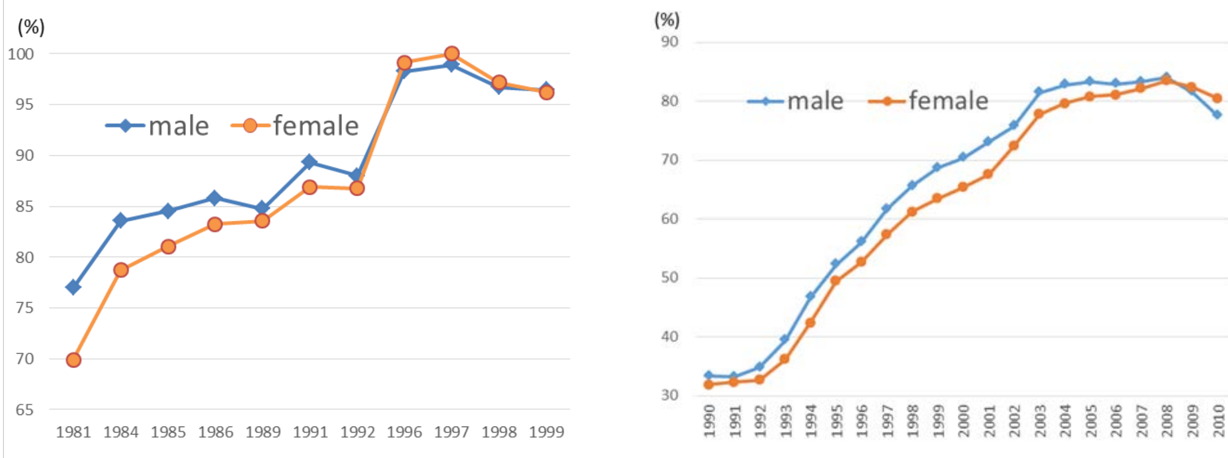
Figure 1 School Enrollment Rates in Korea

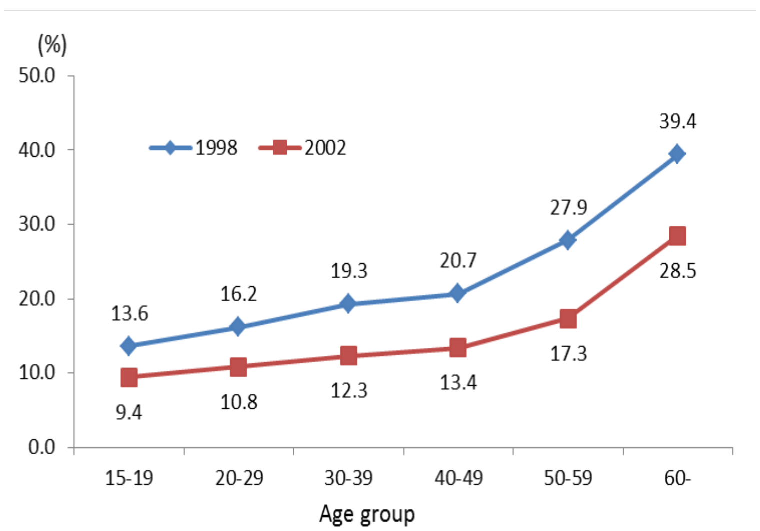
Panel A. Secondary School Panel B. Tertiary School



Source: World Development Indicators (http://databank.worldbank.org/data/).

Source: Ministry of Education, Republic of Korea and Korean Educational Development Institute, *Statistical Yearbook of Education* (http://kess.kedi.re.kr/index).

Figure 2 Percentage of Koreans Who Believe That the Eldest Son Should Care for Elderly Parents



Notes: The figure displays the percentage of Koreans by age who responded “the eldest son” to the question, “Who should primarily support elderly parents?”

Source: Statistics Korea, Republic of Korea, *Social Survey* (http://kosis.kr/).

Table 1 Share of Housing Expenses at Marriage in Korea

Age group	20–30	40–50	60+
Groom	86.5%	78.3%	93.8%
Bride	13.5%	21.7%	6.2%

Source: Lee (2011).

Table 2 Summary Statistics

	Males		Females	
	Mean	S.D.	Mean	S.D.
Work status (0 = working, 1 = retired)	0.41	0.49	0.38	0.49
Weekly working hours (if working)	44.03	15.60	39.76	17.53
Retirement year (if retired)	2003	9.19	2003	10.25
Age	67.48	9.28	65.22	9.01
Ratio of sons to children	0.52	0.29	0.52	0.29
Number of children	2.82	1.25	2.95	1.37
Age of the youngest child	35.14	8.67	36.42	8.49
Education (1 = high school or more)	0.56	0.50	0.30	0.46
Health status (1 = bad health)	0.30	0.46	0.33	0.47
Employment status (1 = self-employed)[a]	0.47	0.50	0.49	0.50
Place of residence (1 = rural)	0.25	0.43	0.31	0.46
Household net assets (US$)[b]	316,885	391,724	258,666	346,414
Observations	2,596		1,779	

Note: Calculated by the authors using data from the Korean Longitudinal Study of Aging.
[a] For retirees, this is measured as the employment status of the most recent job.
[b] Korean won were converted into USD using OECD PPP exchange rates (870 Korean won = 1 dollar, 2014).

Table 3 Probit Estimations (Dependent Variable: 0 = Working; 1 = Retired): Son Ratio

	(1) Male	(2) Female	(3) Male	(4) Female	(5) Male	(6) Female	(7) Male	(8) Female
Ratio of sons	-0.115*** (0.035)	-0.085** (0.041)	-0.098*** (0.037)	-0.071* (0.042)	-0.126 (0.122)	-0.253* (0.133)	-0.101 (0.012)	-0.237 (0.151)
Number of children	-0.059*** (0.011)	-0.054*** (0.012)	-0.017 (0.012)	-0.018 (0.013)	-0.059*** (0.011)	-0.054*** (0.012)	-0.017 (0.012)	-0.018 (0.013)
Age	0.039*** (0.002)	0.029*** (0.002)	0.034*** (0.003)	0.023*** (0.003)	0.039*** (0.002)	0.029*** (0.002)	0.034*** (0.003)	0.024*** (0.003)
Ratio of sons × HH net assets(logged)					0.001 (0.013)	0.018 (0.014)	0.001 (0.013)	0.018 (0.016)
Education (1 = high school or more)			0.066*** (0.025)	0.055* (0.033)			0.066*** (0.025)	0.055* (0.033)
Health status (1 = bad health)			0.229*** (0.026)	0.169*** (0.028)			0.229*** (0.026)	0.169*** (0.028)
Employment status (1 = self-employed)			-0.268*** (0.024)	-0.106*** (0.028)			-0.267*** (0.024)	-0.106*** (0.028)
Place of residence (1 = rural)			-0.192*** (0.030)	-0.216*** (0.032)			-0.192*** (0.030)	-0.216*** (0.032)
Age of the youngest child			0.007** (0.003)	0.005 (0.003)			0.007** (0.003)	0.005 (0.003)
Other characteristics	No	No	Yes[a]	Yes[a]	HH net assets	HH net assets	Yes[a]	Yes[a]
F-Test[b]					10.82 [0.0045]	6.27 [0.0435]	6.91 [0.0316]	3.98 [0.1364]
Obs.	2,596	1,779	2,596	1,779	2,596	1,779	2,596	2596

Notes: We report marginal effects at the means of the right-hand side variables. Robust standard errors are reported in parentheses.
*, **, and *** indicate statistical significance at the 10, 5, and 1 percent level, respectively.
[a] Includes dummies for marital status and spousal work status, and logged household net assets.
[b] F-test on the null that the son ratio and its interaction with HH assets is zero. The p-value is reported in brackets.

Table 4 Probit Estimations (Dependent Variable: 0 = Working; 1 = Retired): Number of Sons

	(1) Male	(2) Female
Number of sons	-0.034** (0.016)	-0.034* (0.018)
Number of daughters	-0.002 (0.012)	-0.005 (0.013)
Age	0.034*** (0.003)	0.024*** (0.003)
Education (1 = high school or more)	0.065*** (0.025)	0.055* (0.033)
Health status (1 = bad health)	0.228*** (0.026)	0.169*** (0.028)
Employment status (1 = self-employed)	-0.267*** (0.024)	-0.106*** (0.028)
Place of residence (1 = rural)	-0.192*** (0.030)	-0.214*** (0.027)
Age of the youngest child	0.007** (0.003)	0.005 (0.003)
Other characteristics	Yes	Yes
Obs.	2,596	1,779

Notes: Per Table 3.
*, **, and *** indicate statistical significance at the 10, 5, and 1 percent level, respectively.

Table 5 Probit Estimations (Dependent Variable: 0 = Working; 1 = Retired): Gender Effects by Birth Order

	(1) Male	(2) Female
1st child's gender (1 if son, 0 otherwise)	-0.041* (0.023)	-0.049* (0.026)
2nd child's gender (1 if son, 0 otherwise)	-0.012 (0.025)	-0.002 (0.027)
3rd child's gender (1 if son, 0 otherwise)	-0.046 (0.033)	-0.016 (0.035)
4th child's gender (1 if son, 0 otherwise)	-0.036 (0.048)	0.010 (0.048)
5th child's gender (1 if son, 0 otherwise)	-0.088 (0.073)	-0.091 (0.068)
Age	0.034*** (0.003)	0.024*** (0.003)
Education (1 = high school or more)	0.069*** (0.025)	0.055 (0.033)
Health status (1 = bad health)	0.229*** (0.026)	0.173*** (0.028)
Employment status (1 = self-employed)	-0.268*** (0.025)	-0.109*** (0.028)
Place of residence (1 = rural)	-0.190*** (0.030)	-0.211*** (0.032)
Age of the youngest child	0.007** (0.003)	0.005* (0.003)
Other characteristics	Yes	Yes
Obs.	2,596	1,779

Notes: Per Table 3.
*, **, and *** indicate statistical significance at the 10, 5, and 1 percent level, respectively.

Table 6 Tobit Estimations (Dependent Variable: Weekly Working Hours): Son Ratio

	(1) Male	(2) Female
Ratio of sons	4.983** (2.016)	5.318** (2.612)
Number of children	1.090 (0.751)	1.558* (0.886)
Age	-2.267*** (0.176)	-1.980*** (0.211)
Education (1 = high school or more)	-4.041*** (1.471)	-0.910 (1.996)
Health status (1 = bad health)	-14.602*** (1.633)	-10.527*** (1.926)
Employment status (1 = self-employed)	16.686*** (1.298)	11.217*** (1.693)
Place of residence (1 = rural)	9.792*** (1.537)	11.440*** (1.876)
Age of the youngest child	-0.335** (0.159)	-0.161 (0.190)
Other characteristics[a]	Yes	Yes
Obs.	2,589	1,760

Notes: Robust standard errors are reported in parentheses.
*, **, and *** indicate statistical significance at the 10, 5, and 1 percent level, respectively.
[a] Includes dummies for marital status and spousal work status, and logged household net assets.

Table 7 Tobit Estimations (Dependent Variable: Weekly Working Hours): Number of Sons

	(1) Male	(2) Female
Number of sons	1.816** (0.936)	2.673** (1.164)
Number of daughters	0.312 (0.782)	0.632 (0.890)
Age	-2.280*** (0.176)	-1.994*** (0.210)
Education (1 = high school or more)	-4.020*** (1.472)	-0.937 (1.996)
Health status (1 = bad health)	-14.618*** (1.633)	-10.539*** (1.927)
Employment status (1 = self-employed)	16.745*** (1.297)	11.214*** (1.694)
Residence (1 = rural)	9.792*** (1.542)	11.351*** (1.878)
Age of the youngest child	-0.324** (0.159)	-0.160 (0.191)
Other characteristics	Yes	Yes
Obs.	2,589	1,760

Notes: Per Table 6.
*, **, and *** indicate statistical significance at the 10, 5, and 1 percent level, respectively.

Table 8 OLS Estimations (Dependent Variable: Age at Retirement)

	(1)	(2)	(3)
Ratio of sons	1.474** (0.577)		
Number of sons		0.673*** (0.198)	
Number of daughters		0.201 (0.165)	
1st child's gender (1 if son, 0 otherwise)			0.711** (0.356)
2nd child's gender (1 if son, 0 otherwise)			0.591† (0.365)
3rd child's gender (1 if son, 0 otherwise)			0.521 (0.423)
4th child's gender (1 if son, 0 otherwise)			0.185 (0.577)
5th child's gender (1 if son, 0 otherwise)			-0.225 (0.833)
Number of children	0.426*** (0.153)		Dummies Included
Gender (1 = male)	4.278*** (0.441)	4.296*** (0.441)	4.267*** (0.443)
Education (1 = high school or more)	-0.700* (0.401)	-0.699* (0.401)	-0.770* (0.405)
Employment status (1 = self-employed)	1.697*** (0.408)	1.703*** (0.408)	1.679*** (0.411)
Age gap between parent and youngest child	0.140*** (0.042)	0.140*** (0.042)	0.142*** (0.042)
Other characteristics[a]	Yes	Yes	Yes
Obs.	2,310	2,310	2,310
Adj. R-sq	0.406	0.406	0.409

Notes: Robust standard errors are reported in parentheses.
†, *, **, and *** indicate statistical significance at the 15, 10, 5, and 1 percent level, respectively.
[a] Dummies for public pension enrollment, occupation, marital status, spousal work status, birth cohort, and logged labor income. All variables are measured at the time of retirement.

Table 9 OLS Estimations (Dependent Variable: Age at Retirement), Parents Born before 1940

	(1)	(2)	(3)
Ratio of sons	1.900** (0.877)		
Number of sons		0.443* (0.250)	
Number of daughters		-0.022 (0.214)	
1st child's gender (1 if son, 0 otherwise)			0.741† (0.508)
2nd child's gender (1 if son, 0 otherwise)			0.188 (0.519)
3rd child's gender (1 if son, 0 otherwise)			0.960* (0.543)
4th child's gender (1 if son, 0 otherwise)			0.265 (0.668)
5th child's gender (1 if son, 0 otherwise)			-0.429 (0.906)
Number of children	0.223 (0.199)		Dummies Included
Gender (1 = male)	4.660*** (0.648)	4.662*** (0.647)	4.733*** (0.443)
Education (1 = high school or more)	-0.881† (0.577)	-0.853† (0.577)	-1.050* (0.594)
Employment status (1 = self-employed)	2.531*** (0.585)	2.560*** (0.584)	2.554*** (0.411)
Age gap between parent and youngest child	0.225*** (0.056)	0.227*** (0.057)	0.212*** (0.058)
Other characteristics[a]	Yes	Yes	Yes
Obs.	1,230	1,230	1,230
Adj. R-sq	0.275	0.275	0.283

Notes: Robust standard errors are reported in parentheses.
†, *, **, and *** indicate statistical significance at the 15, 10, 5, and 1 percent level, respectively.
[a] Dummies for public pension enrollment, occupation, marital status, spousal work status, birth cohort, and logged labor income. All variables are measured at the time of retirement.

Table A.1 Probit Estimations (Dependent Variable: 0 = Working; 1 = Retired): Son Ratio, Children Born before 1985

	(1) Male	(2) Female	(3) Male	(4) Female
Ratio of sons	-0.161*** (0.042)	-0.105** (0.048)	-0.138*** (0.045)	-0.080† (0.050)
Number of children	-0.070*** (0.013)	-0.071*** (0.014)	-0.021† (0.014)	-0.036** (0.016)
Age	0.040*** (0.002)	0.029*** (0.002)	0.036** (0.004)	0.027*** (0.004)
Education (1 = high school or more)			0.094*** (0.029)	0.067* (0.039)
Health status (1 = bad health)			0.207*** (0.030)	0.163*** (0.032)
Employment status (1 = self-employed)			-0.294*** (0.028)	-0.108*** (0.032)
Place of residence (1 = rural)			-0.209*** (0.034)	-0.225*** (0.037)
Age of the youngest child			0.007† (0.004)	0.001 (0.004)
Other characteristics[a]	No	No	Yes	Yes
Obs.	1,897	1,354	1,897	1,354

Notes: Per Table 3.
†, *, **, and *** indicate statistical significance at the 15, 10, 5, and 1 percent level, respectively.