

COMPETITION FOR RESOURCES:
A REEXAMINATION OF SIBSHIP SEX COMPOSITION MODELS OF PARENTAL
INVESTMENT IN JAPAN*

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ABSTRACT

This research challenges the predictions of resource dilution models of educational investment through an analysis of survey data from the Japanese National Family Research 1998 Survey. Exchange-based models of educational investments arguing that boys drain resources away from their sisters are shown to be inadequate. Using mixed models to examine differences in parental educational investments within families, it is shown that while boys with college-educated brothers have lower levels of educational attainment than those without brothers, the same cannot be said for girls with college-educated brothers. These findings support the results of a qualitative analysis of interviews with 71 Japanese respondents indicating that the family culture of investment, defined by parental gender beliefs and valuation of education, shapes the investments that parents make in their sons and daughters.

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How do parents make decisions regarding their children's education? Are investment decisions made independently for each child or does the intended investment in one child shape the educational investment that another receives? Existing research argues that girls and boys are in a competitive market for educational resources with boys draining resources from their sisters (Becker 1991; Conley 2000; Ono 2004; Powell and Steelman 1989, 1990). I argue, however, that we must integrate both quantitative and qualitative methodology in an attempt to critically examine existing theories of investment and to build new models based on parents' narratives of their investment decisions.

REVIEW OF LITERATURE

The literature includes several theoretical models of parental educational investments. This paper focuses on the models dealing with the relationship between sibship composition and educational attainment. The resource dilution perspective (Powell and Steelman 1995; Steelman and Powell 1991), or quantity-quality tradeoff hypothesis (Becker 1991), addresses the availability of resources for investment in children's education. This perspective suggests that the resources available for investment in education are inversely related to the number of family dependents. Empirical evidence supporting this perspective in US families shows that families with many children have fewer resources available to invest in each of their children (Powell and Steelman 1995; Steelman and Powell 1991).

An extension of the resource dilution perspectives looks specifically at the influence of the sex composition of the sibship on children's educational attainment (Conley 2000; Hauser and Kuo 1998; Ono 2004; Powell and Steelman 1989, 1990; Steelman, Powell, Werum and Carter 2002). According to this perspective, there is a competitive market for resources among children in a family. The sex composition models are based on the exchange theoretic assumption that boys are "better" investments than their sisters. Boys are more likely to get higher paying jobs and consistently remain in the labor

force and therefore are more likely than their sisters to provide greater returns (either to the parents or the family as a whole) on the educational investments that they receive. Some empirical evidence suggests that the presence of sons negatively affects the investments that parents make in their children's education (Powell and Steelman 1989, 1990). However, other scholars caution that this negative effect of brothers is only for girls (Ono 2004; Conley 2000). In other words, opposite sex siblings drain resources away from a child. In the case of Japan, Ono finds that for daughters: "it is not the number of siblings per se that reduces her chances of advancement, but the number of brothers that strongly determines her fate...intra-household resources are likely to be allocated in favor of sons and away from daughters. From a woman's perspective, an additional brother reduces her chances of advancing to university because the household resources are "drained away" from her in favor of supporting her brother's education" (2004, 154-5). Others have not found any consistent, significant effect of the sex composition of the sibship on children's educational attainment (Hauser and Kuo 1998).

THE CASE OF JAPAN

Japan is a compelling case in which to study parental educational investments for several reasons. In Japan, parents invest more, on average, in boys than in girls. A 1994 survey of Japanese citizens¹ found that while 69% of Japanese parents aspired to at least a university education for their sons, only 34% held such aspirations for their daughters. Differences in aspirations are manifested in the actual enrollment of women and men in college. According to the 2003 Ministry of Education Basic School Survey, while 96% of male high school graduates continuing their education went on to a 4-year university, only 68% of female high school graduates pursuing a higher education did.²

¹ International Comparative Research on "Home Education," Survey on Children and Family Life.

² 31% of female graduates continuing their education went to junior college. If we look at all high school graduates, 41% of men and 32% of women went to a 4-year university in 2003.

Children's educational attainment in Japan is largely dependent on parental investment, given the scarcity of public funds and scholarships for higher education.

Overall, the gender equity of educational attainment has increased across the 20th century in Japan. Men still represent a larger portion of the university student population than do women, however. Significantly higher percentages of women attend junior colleges but junior colleges do not provide the institutional connections necessary to secure a career with promotion opportunities and therefore are not considered in the same category as 4-year universities. Even if a parent spends roughly the same amount of money on a 4-year degree for their son and a 2-year degree for their daughter, the investments are qualitatively different in terms of the labor market opportunities afforded by each. For this reason, "equity" in educational investments is achieved only when parents send both their sons and daughters to universities. Equity, for the purposes of this research, is not determined by the amount of money spent on sons and daughters' education but by the *level* of education attained by men and women.

In order to understand the dynamics of parental investments, it is important to consider how investments are made in cultural contexts outside the U.S. Japan is a compelling case for the study of investments because, like the U.S., it has a postindustrial economy. However, family structure, social institutions, norms, and beliefs in Japan are different than in the U.S., allowing for an examination of the role played by beliefs and values in shaping parental investments.

DATA AND METHODS

A combination of both quantitative and qualitative methods are used in this research. The research design is "preliminary quantitative in a qualitative study" (Morgan 2004) because the emphasis is on assessing the meaning of parental investments through qualitative analysis. Studies of parental investment in children's education are often based on quantitative analyses of survey data (e.g. Powell and Steelman 1995; Hauser and Kuo 1998; Ono 2004). Such research is well-suited to

studying patterns of investment and for this reason I include an analysis of survey data as a first step in understanding the patterns of investment in Japanese families. The qualitative methods used in this research, however, allow for the analysis of the meaning of education, the discourse of investment decisions, within families. I argue that we need both quantitative and qualitative accounts of parental investments in order to assess the explanatory power of the range of available theories of investment. These qualitative data provide insight into the motivations for parental investments, something unavailable in previous analyses of survey data.

QUANTITATIVE DATA AND METHODS

The quantitative data used in this analysis come from the Japanese Family Sociological Association's 1998 National Family Research (NFR98) survey.³ This survey includes a nationally representative sample of 6985 respondents and questions regarding the educational attainment of up to three of the respondent's children in addition to measures of the respondent's gender beliefs. Using multilevel models, I examine the role of the sex composition of the sibship in shaping the educational investments that parents make in their children. These data are remarkable for their inclusion of information about the respondent's siblings and three of their children. Such data are rare in Japan and provide the unique opportunity to analyze parental investment at the family level through a comparison of investments made in children in the same family.

[TABLE 1 ABOUT HERE]

Multilevel models are used in this paper to deal with the nonindependence of observations from the same family (sibling data).⁴ When such clustering is ignored, the standard errors of the parameters tend to be underestimated (Guo and Zhao 2000). Since these are "mixed" models, they include both fixed and random effects and I am, therefore, able to assume that family differences are randomly

³ The data for this secondary analysis, "Nationwide Survey on Families, National Family Research Group, Japan Society of Family Sociology" were provided by the Social Science Japan Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, The University of Tokyo.

⁴ These models were estimated using the mixed procedure in SAS.

distributed in the population. For this reason, I can generalize my results from this sample of families to other families in the population.

Following the notation of Raudenbush and Bryk (2002), the equations used in the multilevel analysis are:

$$\textbf{Level 1: } y_{ij} = \beta_{0j} + \beta_{1j}x_{ij} + r_{ij}$$

$$\textbf{Level 2a: } \beta_{0j} = \gamma_{00} + \gamma_{01}w_j + u_{0j}$$

$$\textbf{Level 2b: } \beta_{1j} = \gamma_{10} + \gamma_{11}w_j + u_{1j}$$

Where:

$\gamma_{00}, \dots, \gamma_{11}$ are level-2 coefficients

r_{ij} is a level-1 random effect

x_{ij} is a level-1 predictor

u_{0j}, u_{1j} are level-2 random effects

w_j is a level-2 predictor

In reduced form, there is a natural cross-level interaction between x and w and, for this reason, there are interaction terms for each level-2 variable and any level-1 variable identified as randomly varying across families:

$$y_{ij} = (\gamma_{00} + \gamma_{10}x_{ij} + \gamma_{01}w_j + \gamma_{11}w_jx_{ij}) + (u_{0j} + x_{ij}u_{1j} + r_{ij}).$$

QUALITATIVE CASE SELECTION

For the qualitative portion of this research, comparable samples in Tokyo and Okinawa, Japan were selected in order to provide interview data from a variety of families with different levels of education, different occupations, and living in rural and urban settings. The interviews were conducted in Japanese by the author from 2002-2003. Okinawa is the ideal location for studying gender and education because of the persisting gender gap in educational attainment coupled with relatively high female labor force participation and female caregiving for biological parents. Okinawa also has the highest fertility in Japan, in comparison with Tokyo where fertility is low. According to the Ministry of Health, Labor and Welfare, in 1998 the live birth rate in Japan was 9.6 per 1000 population and in

Okinawa was 13.6 per 1000 population. The standard of living and the rate of household savings in Okinawa are also the lowest of any prefecture in Japan, suggesting that resources for investing in children's education and for making bequests are perhaps more restricted in Okinawa than in other parts of Japan. Children in Okinawa are the least likely in Japan to attain a college education (Tamamori and James 1995). While the overall labor force participation rates of women in Tokyo and Okinawa are similar, rates for younger women are slightly higher in Okinawa. According to the 2003 Survey of the Labor Force, women age 25-34 in Tokyo and in Okinawa have the same labor force participation rate of 69%, but among women age 35-44, those in Tokyo have a participation rate of 59% while in Okinawa they have a rate of 64%. This is in contrast to male labor force participation rates. Among men ages 25-34 and 35-44, Okinawan men have slightly *lower* rates of labor force participation than do their Tokyo counterparts. Overall it seems that Okinawan women are somewhat more likely to remain in the labor force when their children are small. These factors make Okinawa an interesting case in which to study the explanatory value of exchange models of investment since resources are more limited in Okinawan families but daughters in Okinawa are just as likely to work outside the home as their Tokyo counterparts.

[TABLE 2 ABOUT HERE]

Tokyo is an important comparison for Okinawa since one quarter of Japan's population lives in the Tokyo metropolitan area. Compared to Okinawa, many Tokyo families have broken with traditional norms of filial obligation in moving from their hometowns to find employment in the city. The Tokyo respondents in this sample have somewhat higher levels of education than their Okinawan counterparts, but the Tokyo and Okinawan cases included in the final analysis are similar in terms of family background. The occupational and class backgrounds of the respondents in Tokyo and Okinawa are not that different since many of the older Tokyo respondents were farmers in more rural areas of Japan in their youth before moving to Tokyo. Seven out of the nine Tokyo respondents

included in the final analysis were of agricultural or working-class origins and six of these nine respondents grew up outside of Tokyo and moved there only as young adults. All of the Okinawan respondents came from farming or working-class families (with a range of occupations from farmers and fisherman to carpenters and civil servants). In order to measure the respondents' wealth, I asked them about their pensions and their standard of living in retirement. Only three of the Okinawan respondents and two of the Tokyo respondents indicated that they would be able to make ends meet without their pensions. (These cases will be analyzed separately in the final analysis.⁵) Overall, the respondents in Tokyo were not wealthier than their Okinawan counterparts. For example, when asked about inheritance and succession, one Tokyo respondent explained: "In my neighborhood, there wasn't the type of property and wealth that is bequeathed. Everyone made their own way."

While there are many historical and demographic differences between Tokyo and Okinawa, they also share many important similarities, making them appropriate cases for this analysis. The same traditions of the eldest son providing care to his parents and of daughters joining their husbands' families inform family relations in Tokyo and Okinawa. Before World War II, both Okinawa and Tokyo shared smaller family sizes than the national mean and in both cases the *Ie* family system organized family life. According to Ochiai (1997: 58-9), the Japanese *Ie* family system is "a corporate body which owns household property, carries on a family business, and emphasizes the continuity of the family line and family business over generations." The *Ie* family system is a patriarchal family structure characterized by Confucian filial obligation, primogeniture, and the exit of adult daughters from the family of origin upon marriage.

QUALITATIVE METHODS

I distributed written questionnaires and conducted interviews first with respondents living in Tokyo and then with residents of Okinawa. In both regions, I volunteered at a public day service

⁵ All of the quotes included in the text are from families who indicated that they are financially dependent on their pensions in retirement.

center for the aged, observing the daily functioning of the eldercare centers while gaining entrée with these communities of older adults. In Tokyo, the day service center was located in one of the traditional “downtown” residential Tokyo neighborhoods and in Okinawa, the center was in a suburban, residential area. Volunteering with the older adults and participating in their daily routines allowed me to gain “intimate familiarity” with their social context (Lofland and Lofland 1995). The time spent informally asking the eldercare clients about Japanese families and traditions created a natural transition to asking for interviews to further my study of Japanese families. In selecting these samples of older respondents, I insured that I would capture some near complete records of intergenerational transfers across the respondents’ life courses in order to more accurately examine the predictions of exchange models of educational investment. Sampling at day service centers also insured that I would have the opportunity to talk with people in need of some form of old age care about the provision of care by their own children.

Bias resulting from the selection of respondents at day service centers for the aged is minimal. While social welfare programs for the elderly were somewhat unpopular 30 years ago, day service (mainly for socializing) and day care (socializing and physical therapy) centers for adults age 65 and up have become increasingly popular in recent years. According to the Ministry of Health, Labor and Welfare, in 1997 there were 5625 day service centers nationally. On average, in 2001-2, 3,840,000 older people each month took advantage of the services offered at day service centers while living at home. Particularly with the advent of the national long-term care insurance system instituted in April 2000, such day service centers have become affordable and accessible to all. Under long-term care insurance, clients at the day service centers pay only 10% of the participation fees. In 2001, this amounted to \$3.30-\$5.60 for 4-6 hours of day service, on average. In most cases, the older clients at the day service centers that I spoke with enrolled in the day service program because they lived with a child who worked during the day or because they simply wanted to get out of the house and socialize

with their peers. Unlike residents in nursing homes whose children were typically uninvolved in their parents' care, the clients in the day service centers still received assistance with the activities of daily living, emotional companionship, and financial assistance and housing from their children. These respondents are unlikely to be very wealthy because they are participating in public day service centers rather than hiring home health workers. Since I am most interested in how families allocate *scarce* resources, this sample of respondents is ideal. Therefore, day service centers provided a context in which to find respondents receiving some care from their children in middle and lower-middle class families.

To supplement these interviews with older adults, I also interviewed younger people in Okinawa who were part of a women's club that volunteered at the day service center at which I volunteered. Several of the volunteers chose to work there because their own parents had received care, or were currently receiving care, from that elder care center. In this way, the socio-economic backgrounds of the older and younger respondents in Okinawa were very similar—both groups of respondents lived in the same communities, worked in similar jobs, and, in some cases, were even relatives.

I asked all of the respondents essentially the same general questions regarding their own educational attainment, that of their siblings, and that of their children. By asking the respondents to first recount how educational decisions were made for each of their children, I was able to capture both the details of investment decisions and, in most cases, how the respondent felt about the decisions. I entered the field informed by theories of parental investment but did not set out to either confirm or refute these theories. Rather, consistent with a grounded theory approach (Glaser and Strauss 1967), my objective was to develop a model of investment based on respondents' accounts of their investment decisions.

The interviews provide a discourse of educational investment and elder caregiving decision-making processes. Such in-depth accounts of investment decisions allow us to examine the motives and reasoning underlying parental investment decisions. These interview data were matched with data from a written questionnaire in order to compare respondents' answers to survey measures of gender beliefs and their verbal account of their gender beliefs and their investment decisions.

I interviewed 16 people in Tokyo and 55 in Okinawa for this research. I essentially interviewed all lucid clients at the day service centers in Tokyo and Okinawa. Of the 59 older adult clients selected as capable of being interviewed, only 4 refused. For the younger sample, all of the members of the women's club that were volunteering at the eldercare center were asked for an interview and all of the members agreed to be interviewed. Interviews were conducted in Japanese by the author either in a private room or a section of the day service center that was removed from the other clients. Interviews lasted from 30 to 90 minutes. In order to meet the criteria for this research, respondents must have been born between 1911 and 1950 (to increase comparability) and have adult children. However, for the analysis of the gender equity of parental investments presented here, I exclude families with only boys or with mixed sex siblings in which *none* of the children receive an educational investment to continue past high school since the gender equity of investments in such cases is difficult to assess. This exclusion follows my definition of gender-inequitable investments as occurring when a parent of a mixed sex sibling set sends their son to a higher level of education than any of their daughters or when the parent of an all-girl sibling set sends none of their daughters to a 4-year university. Gender-equitable investments are defined as occurring when at least one daughter in a mixed sex sibling set receives an educational investment greater than or equal to her highest-educated brother or when at least one girl in an all-girl sibling set receives an investment to attend a 4-year university. The average number of children per family in this sub-sample is not larger than in the full sample of families with any adult children. I also restrict my sample to families in which the parent-respondent answered the

questions regarding gender beliefs and valuation of education, leaving a total of 45 families in the final sample.

Interviews were transcribed in Japanese and coded according to the main research themes. While coding, central themes emerged as significant in the investment decisions. In particular, parents made frequent reference to gender beliefs and to their valuation of education in explaining the investments that they made. Using these interview data as the foundation, a “family culture of investment” model of parental investment was inductively built based on respondents’ thick descriptions of investment decisions (Strauss 1987). By a “family culture of investment” model I mean a model of investment that takes into account the family context in which investment decisions are made. More specifically, in this research I find that parental gender beliefs and valuation of education define the context in which investments are made and are related to the gender equity of the educational investments made in a family. Having identified gender beliefs and valuation of education as significant themes in the investment discourse, questionnaire data were used to confirm the classification of respondents according to gender beliefs and gender equity of educational investments in their children. In this way, I was able to uncover the meaning of parental investments and to build a model of investment decisions based on parents’ accounts of their investment decisions.

The focus in this research is on parental investment decisions. While children certainly have a say in their educational attainment, they are much more constrained by parental investment decisions than their American peers because of the paucity of scholarships for Japanese students. In order to understand persisting gender inequality in Japan, I argue that we must analyze the motives of those holding the purse strings. For this reason, this research focuses on parental motives and investment decisions. Without parental resources, students have great difficulty attending a university in Japan. Parental educational investments were measured by asking about the educational investments that

respondents gave to each of their children. Not only financial contributions are considered but also parental support for, or resistance to, a child's education.

Gender beliefs were assessed first by a series of Likert scale measures of gender beliefs. Four items were used to assess gender beliefs in the written questionnaire. Respondents were asked whether they agreed, somewhat agreed, somewhat disagreed, or disagreed with the following statements: (1) when a daughter marries, she leaves her parents' family and joins her husband's (2) men should work outside the home and women should care for the family (3) it is more important for a son to graduate from college than for a daughter and (4) when a woman has a baby, she should quit her job. As a rough classification, respondents were classified as holding liberal gender beliefs if, on average, they disagreed or somewhat disagreed with these statements of traditional gender beliefs. Those who agreed or somewhat agreed with the traditional statements were initially classified as holding conservative gender beliefs. These classifications were confirmed and refined based on the respondents' discussions of the gender beliefs expressed in the written questionnaire and their identification of their written responses as reflecting either their ideal gender beliefs or the reality of gender beliefs. Respondents also discussed the differences among their own children and the household responsibilities of the respondent and their spouse and their responses were coded for gender themes. Finally, valuation of education was measured in this study first through open discussions of investments in children and, as this emerged as a theme in the interviews, through open-ended questions asking the respondent to discuss the value of higher education for a daughter and then for a son.

FINDINGS

QUANTITATIVE ANALYSES

As an initial test of the appropriateness of multilevel models for analyzing these survey data, the intraclass correlation coefficient was estimated in order to determine the extent of nesting in the

data. The intraclass correlation is the proportion of total variability that is accounted for by differences among families. Typical fixed effects models assume $ICC=0$. However, in these data, 48% of the total variability in years of education observed can be attributed to clustering within families. Therefore, we can conclude that there is empirical evidence of nesting in our data and that ignoring this source of variation would be inappropriate. Without accounting for the nesting, the estimates of our standard errors are likely to be too small.

Nested models were estimated in order to assess the contribution of sibling sex composition models. In model 1, the intercept varies randomly across families. In models 2 and 3, the intercept and the effect of child's gender vary randomly across families. In model 1, the intercept (10.67) reflects the model implied mean years of education for boys with 0 siblings, living in rural areas with parents born after 1930 and with mothers and fathers with less than a high school education. The main effect of female in model 1 reflects that being a girl is associated with completing about half a year less education on average. In addition, having a higher family income, no siblings (compared to one or two), living in a city, having earlier-born parents, and having parents with at least a high school education are all statistically significantly (at the 5% level) related to higher levels of educational attainment. When interactions with child's gender are added in model 2, the positive relationship between educational attainment and having earlier-born (1921-30) parents is attenuated for girls. Girls with parents born 1921-30 do not fare as well as girls with later-born parents in terms of educational attainment. It is important to note that, as would be predicted by a resource dilution model of parental investment, children with two siblings (compared to no siblings) complete fewer years of schooling on average. This negative effect of family size does not, however, seem to vary by gender. In both models 1 and 2 the random effects are statistically significant. In other words, the intercept varies over families and the magnitude of relationship between child's gender and educational attainment varies across families.

[TABLE 3 ABOUT HERE]

There is no omnibus test of fit for multilevel models but the BIC accounts for the sample size and the number of parameters. The addition of parameters in model 2 improves the model fit. When comparing the model deviances of these nested models, the additional parameters added to the model statistically significantly (at the 1% level) improve the model fit.

In model 3, indicators of the presence of college-educated siblings were added to the variables in model 2. The addition of these parameters also improves model fit (when comparing model deviances) compared to model 2, at the 1% level. In this model, having a brother who is a college graduate is associated with a lower level of education for boys. However, the negative effect disappears for girls. Again, boys with a college-educated sister attain lower levels of education than those with no sister at all. But the negative effect for girls is much smaller. Patterns of parental investment within Japanese families do not seem to follow the predictions of resource dilution models in which boys who are sent to college drain resources away from their sisters, as predicted by Ono.⁶ Rather, girls with college-educated brothers may in fact receive higher levels of education, on average, than girls without brothers. Since resources alone do not seem to determine the level of investment in girls, I argue we must analyze parents' own accounts of their investment decisions in order to gain a better understanding of how such investment decisions are made in families.

Another finding to highlight from these multilevel models is the importance of parental birth cohort in shaping parental investments. Daughters with parents born from 1921 to 1930 attained lower levels of education than boys with parents from the same birth cohort. Parents born from 1921 to 1930 are also statistically significantly (at the 1% level) more likely than their later-born peers to express conservative gender beliefs. This may be related to these parents' rearing in a culturally more

⁶ When missing data are replaced using multiple imputation in SAS, the substantive findings do not change. The results from the multiple imputation analyses suggest that the standard errors of the estimates in the standard models may be slightly over-estimated. As a result, variables for sibship size, urban residence, gender, and the interaction of family income and gender are statistically significant at the 5% level in the multiple imputation models.

conservative time. According to Ochiai (1997, 35), “in the postwar period, the state of being a housewife became so strongly normative that it was practically synonymous with womanhood.”

Later-born cohorts (born 1931-1964) reached adulthood and had children as Japan was growing as an economic superpower and women were working outside the home in greater numbers. In this way, parents’ motives for investing in their children may have changed between birth cohorts and later-born cohorts are more likely to view their daughters and sons equally. The special role of the eldest son in caring for his parents and of succeeding the family was outlawed following WWII and more recently-born parents reached adulthood and had children in a Japan that was, at least officially, more gender-equitable. To further explore these questions about the importance of gender beliefs in understanding parental investments and also the shortcomings of an exchange model of investment, we must turn to an examination of the meaning of parental investments in qualitative data.

QUALITATIVE ANALYSES

Gender Beliefs

In the analysis of the discourse of investment decisions, I coded the interview transcripts for the recurrent themes surrounding investments that arose. Given that available resources alone do not seem to adequately explain patterns of investment in Japanese families, I set out to uncover how parents explain their investment decisions in their own words. One theme was that of gender ideology. Parents made frequent mention of gender beliefs in explaining their educational investments in their children. An Okinawan woman born in 1928 explained why her son went to a 4-year university and her daughters went to junior colleges this way:

From now, men will be central supports in the household. They’ll be central. They must learn about their brains and skills in 4-year schools. Girls are different, though. If they get married, they will focus on their partner.

In explaining the different levels of investment they made in different children, respondents referred to their gender beliefs. An Okinawan woman born in 1942 similarly justified the higher level of investment she made in her son:

Maybe it's because in Okinawa, we cherish the eldest son. Maybe it's related to this.

Even today, we still cherish him. So, for girls, they shouldn't spend all their time studying.

I told my daughter she should "study" to become a good bride.

Like the woman quoted before, this woman believes that sons and daughters have different statuses and roles in the family. Men are central in the family and should be educated. Women are peripheral—their role is to learn to become a good wife. For this reason, parents choose to limit their educational investments in their daughters, even when they have no sons in whom to invest.

Since gender beliefs emerged as a recurring theme in respondents' discussion of their investment decisions, I decided to look more closely at the relationship between gender beliefs and educational investments. I found that, overall, those who invested less in their daughters than in their sons held more traditional gender beliefs. Apart from their accounts of investment decisions, parents were also asked to respond to, and elaborate on, a series of gender belief measures. An Okinawan woman born in 1929 who sent her sons, but not daughter, to a university, explained her opinions regarding a gendered division of household labor this way:

Ideally, a wife would be at home, taking care of the house, well, in the kitchen. The father would be a good provider, he would earn a good income. If he earns a good income then they can build a grand home.

Similarly, a Tokyo woman born in 1914 who sent did not send any of her four daughters beyond high school (she had no sons) expressed conservative gender beliefs when stating that she

believes men should work outside the home and women should care for the family. She explained this position by saying:

If a home is well cared-for, it makes it easy for a man to work...Men have their work but women must care for the home.

Parents such as these who invested less in their daughters than their sons expressed more conservative beliefs regarding women's place in the home, the importance for women of quitting their job after having children, and the transitory status of women in their families of origin. In comparison, those who invested gender equitably in their children were more likely to express liberal gender beliefs. An Okinawan woman born in 1934 and similar to the one quoted above in terms of educational attainment (she did not attend a junior or 4-year college) and birth cohort explained that she does not believe women should stay in the home:

When possible, I think women should also work outside the home and study society.

Unlike the conservative women quoted earlier, this woman invested in a university education for both her son and her daughter. Similarly, a Tokyo woman with a high school education (born in 1919) who sent her son and one of her two daughters to college expressed her liberal gender beliefs this way:

Men and women are both equal I think. In the future, this will be increasingly true.

In general, gender-conservative parents did not necessarily invest in the child they think has the best labor market opportunities or who will provide the greatest returns to the family but rather in the child they think *should* graduate from college and support *his* family. In many cases, parents with conservative gender beliefs had an ideal level of education in mind for their daughters that was unrelated to the cost of the education. Even though a junior college may cost the same as a four-year institution, conservative parents would prefer to send their daughters to the two-year school. However, gender beliefs alone do not explain the variation in investment strategies observed in both Tokyo and

Okinawa—parental valuing of education also emerged as a theme in the discourse of investment decisions.

Valuation of Education

The value of education for children arose as another theme in the discourse of investments. Respondents expressed different valuations of education both in their open discussions of investment decisions and also in response to more targeted questions addressing the value of education. In particular, most responses can be categorized according to two themes: job preparation and cultural enrichment. Some respondents were relatively more likely to cite securing financial stability or assisting a child in attaining a career as the value of education. One Okinawan mother (born in 1925) of seven children explained why she sent her son to college this way:

Because his father and I have had a life full of hardship, we decided to send him to school so that we could spare him from a life of similar hardships and he would find a good job.

We decided we didn't want to turn over our troubles onto him.

Respondents with a utilitarian valuation of education focused on job readiness. Many explained that the primary motive for sending their child to college would be to prepare them for a high status and high-paying job. Some similarly explained the comfort their children's education gave them, knowing they would be able to support themselves and their families.

Others, however, described the value of education as lying in cultural enrichment or personal discovery. These respondents mentioned the freedom to pursue your own interests and the opportunity to carefully consider your career path that are afforded by a four-year college education. An Okinawan mother (born in 1926) of four explained the value of higher education as broadening a child's world knowledge. Although this woman was born in the same birth cohort and has a junior high education like the woman with the utilitarian valuation of education quoted above, this woman's valuation of education is quite different:

You can understand the world and beyond studying, you gain knowledge—I think this is nice. Your way of thinking about things—people who aren’t educated have a completely different way of thinking about things—so I think it’s good.

While a college education clearly opens career doorways, it also holds a larger value in transitioning the child to adulthood. Among respondents with a broad valuation of education, a college education conferred general, world knowledge to their children in addition to the occupational, technical knowledge taught in the classroom. In these ways, parents differed in their valuation of education.

Together with gender ideology, valuation of education can provide insight as to how parents will invest in their children. Overall, respondents with conservative gender beliefs who see the only motive for higher education as lying in career preparation are unlikely to invest in the education of their daughters while those with a broad valuation of education and liberal gender beliefs are more likely to invest gender equitably. An Okinawan mother (born in 1942) of a college-educated son and a daughter who attended high school explained her valuation of her son’s education this way:

Well, I only thought about his earnings stability. If he went to a good school, then he could get into a good job. That’s all I thought about.

This focus on a utilitarian valuation of education in conjunction with her strong support for a gendered division of labor led this mother to invest more in her son than her daughter.

[TABLE 4 ABOUT HERE]

Although respondents with conservative gender beliefs and utilitarian valuations of education like the woman just quoted are likely to invest more in their sons than in their daughters, this is not necessarily the case for respondents with similar gender beliefs but a

broader valuation of education. For example, an Okinawan mother (also born in 1942) of a daughter and two sons explained that a girl can learn from studying “human relations” in college:

When you go into a household as a bride, it’s good if you’ve studied human relationships and became a kind woman. Somehow, those who focus on work don’t understand this aspect. I think it’s fine if a woman becomes ladylike and kind and considerate.

Despite her conservative gender belief that women should be primarily concerned with becoming good wives and mothers, this respondent still thought it important to invest in the higher education of women—not in order to prepare them to succeed in the labor market but rather to provide them with the knowledge of human relations to be good mothers. In fact, this respondent sent her daughter to a higher level of education than either of her sons. This is an advantage of analyzing in-depth interview data of parental investments: nuances in the meaning of educational investment become apparent in the educational investment discourse.

Similarly, a Tokyo man born in 1918 expressed both conservative gender beliefs and a broad valuation of education. This man does not believe women should work outside the home and yet still sent his two daughters (and two sons) to college because he felt their education added to the quality of their life. He described to me the value of college for one of his daughters this way:

My eldest daughter graduated from a fine arts and Japanese painting college...After graduating from college, she married right away. Because her husband works for IBM and their life is comfortable, she paints as a hobby. She won prizes and did it as a hobby but for her livelihood, she never sold her work. On just her husband’s salary, they were able to have a sufficient livelihood. It’s in this that there is happiness.

From the respondents’ accounts of their investment decisions it is clear that respondents may hold conservative gender beliefs and still invest in the college education of their daughters.

Similarly, although gender ideology is the primary factor shaping educational investments, a respondent with a utilitarian valuation of education could hold liberal gender beliefs and still invest less in their daughter's education than in their son's because they perceive there to be limited market opportunities for female graduates. An Okinawan mother (born in 1926) of two boys and a girl explained that the value of higher education for her children was in the careers that they attained--a utilitarian valuation. She also expressed liberal gender beliefs. Ideally, she felt that women should work outside the home. She explained:

Rather than just staying home after having children, you can learn many things by working outside with others. I think this is better than being shut up in the house.

Although this woman's ideal was to work outside, she recognized the difficulty for women of combining work and family. She explained:

Because women are primarily responsible for the home, they can't work the same as men.

No matter how much we talk about gender equality, when something comes up with the children, only the women looks after them.

In this way, this woman does not judge investments in daughters to be as important as investments in sons because, although she would ideally support women's employment outside the home, cultural lag keeps women from participating in the labor force in the same way as men. Since she views education primarily as a means of securing a good career, this woman only sent her son to college while her daughter attended junior college, an appropriate level of investment for the careers most conducive to work-family balance in Japan.

While some respondents held relatively liberal gender beliefs regarding women's role in the family and invested less in their daughters' education than their sons', most respondents with liberal gender beliefs and a utilitarian valuation of education felt sons and daughters should be invested in

equally. For example, an Okinawan mother (born in 1935) of a son and a daughter (both of whom she sent to a university) explained what she saw as the value of education for women:

Women are also business-minded and have a hand in work. The ability to provide for yourself is necessary, I think.

This woman sees the value of education as lying in a career and holds liberal gender beliefs and thinks it is appropriate to invest in the education of *both* sons and daughters. Unlike the woman with similar gender beliefs and valuation of education who invested more in her son, this woman believed that capable women would have the same labor market opportunities as men and chose to invest in her daughter's higher education.

When parents see alternative motives for education beyond just career promotion, however, daughters are even more likely to be considered worthy investments. Those most likely to invest equitably in their sons and daughters are parents with both liberal gender beliefs and a broad valuation of education. These respondents support women's labor force participation and believe that a university education will not only help their daughter attain her career goals but will also expand her world view because of the combination of liberal gender ideology and broad valuation of education. A Tokyo mother (born in 1919) of one daughter (whom she sent to a 4-year university) with liberal gender beliefs described the value of a college education as based on an individual's personal goals and as inherently valuable. She explained:

I think for everyone individually, if they think they want to go, then they should go... I think there is an inherent value (in a college education).

Similarly, an Okinawan mother (born in 1935) of five girls, four of whom attended a four-year university, explained that it is a waste for a woman to quit her job after having children and went on to explain the value of education for children this way:

The value? I didn't go to school so I thought that I wanted to send them as far as they wanted to go in school...For both (girls and boys), they should follow their dreams.

This woman's liberal gender beliefs and broad valuation of education as providing personal fulfillment for her children created a "family culture" of educational investment in which investments in the university educations of daughters were supported. Like the women quoted earlier who invested more in their sons than their daughters, this woman also had a low level of education herself (junior high), but she still supported the college education of her daughters.

As is evident in Table 4, this "family culture of investment" model of investment incorporating both parental gender beliefs and valuation of education explains the observed patterns of educational investment well. Overall in these families, the parents focusing their investments most heavily in sons are the parents with conservative gender beliefs and a utilitarian valuation of education (12 of the 17 parents classified as expressing conservative gender beliefs and a utilitarian valuation of education invested inequitably in their children). Parents with liberal gender beliefs and a broad valuation of education, on the other hand, invested more equitably than any other parental type in my typology of investment. (None of the 7 parents classified as expressing liberal gender beliefs and a broad valuation of education invested inequitably in their children.) Overall, the model fits the observed patterns of investment well with the most dramatic differences in investment patterns found in the two extreme parental types: conservative/utilitarian and liberal/broad.

When the sample is divided according to educational attainment, birth cohort, and family wealth, the same patterns of investment persist. Overall, in these sub-categories as well, those with a broad valuation of education and liberal gender beliefs are more likely to invest equitably in their children while those with a utilitarian valuation and conservative gender beliefs are more likely to invest inequitably in their children by gender. More highly educated respondents were more likely to invest gender equitably. However, variation by gender beliefs and valuation of education was still

evident within this well-educated sub-group. These findings support the argument that parental gender beliefs and valuation of education play an important role in parental educational investment decisions.

[TABLE 5 ABOUT HERE]

The Tokyo and Okinawan respondents included in the final analysis did not differ in a systematic way in terms of educational attainment. Tokyo respondents were, however, only included in the older cohort of respondents and were more likely to both hold a broad valuation of education and liberal gender beliefs. In fact, only one respondent from Tokyo (who was included in the final analysis) expressed a utilitarian valuation of education. Tokyo respondents were more likely, overall, to invest gender equitably in their children than were their Okinawan counterparts.

The model of parental investment developed here moves beyond an explanation of the patterns of investments—how different types of families invest in different ways based on their available resources—and presents a model of investment to help us understand why parents invest the ways that they do. In order to uncover the motives for parental investment, it became necessary to understand the meaning that parents attach to their investments. In their interviews, parents discussed their educational investments as either utilitarian or culture-enriching. This meaning attached to investments, along with gender beliefs, can explain much of the variation in investment patterns observed in this sample of respondents. In the quantitative analysis of survey data, the predictions of resource dilution models were not met and in the analysis of interview data, the dilution of resources by multiple children was not a dominant theme. Rather, respondents made frequent references to both gender beliefs and valuation of education in recounting their investment decisions. Through this analysis of the meaning of investments, we can better understand the mechanisms underlying gender inequality in educational outcomes in Japan.

CONCLUSION

Overall, it is clear from these analyses that investment decisions are considerably more complex than portrayed by resource dilution models of investment. The results of the multilevel analyses of Japanese survey data indicate that resource dilution models reasonably approximate the investment process in boys but are simply inaccurate in the case of girls. Brothers and sisters are not in a competitive market for resources. Based on this discrepancy with the predictions of a resource dilution model of investment, I set out to examine the meaning of investments through the analysis of qualitative data.

Instead of referencing resource constraints in their accounts of their investment decisions, most parents referred to their gender beliefs and valuation of education as shaping the investments made in their children. Of course resources matter, but within this sample of working-class respondents, gender beliefs and valuation of education account for much of the variation in parental educational investments observed in these families. Families with conservative gender beliefs and utilitarian valuations of education were unwilling to invest in their daughters' higher education while those with liberal gender beliefs and a broad valuation of education were more willing to invest equitably in their sons and daughters.

This research raises questions about the applicability of existing sex composition models of investment in explaining educational investments in Japanese families. In future research, better indicators of girls' expected labor market attachment and of individual scholastic ability are needed to include a full test of economic exchange models of investment as well. In this research, it is assumed that individual academic ability is uncorrelated with gender and therefore the observed gender disparities in parental educational investment cannot be attributed to individual differences in ability. Parents may, however, assess the ability level of their children differently depending on the child's gender. This issue will be left to future research.

This paper attempts to build a more complex model of parental investment based on respondents' own accounts. Japan is an interesting case for the study of parental investments because, like the U.S., it is characterized as a postindustrial economy and yet its cultural norms and beliefs are distinct from the U.S.. In highlighting the limitations of a resource dilution perspective and the importance of both parental beliefs and values in shaping investment decisions in the context of Japan, this research encourages in-depth examination of the non-economic factors shaping investments in the U.S. and also the testing of existing models of investment in other cultural contexts.

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Table 1. NFR98 descriptive statistics.

Variable Name	Label/Reference Category	Mean	S.D.
Female child		0.48	0.50
Log family income	Family income in 10,000s of yen	6.37	0.77
2 siblings	REF: child has 0 siblings	0.39	0.49
1 sibling	REF: child has 0 siblings	0.54	0.50
Lives in city	Lives in city of 100,000+	0.51	0.50
Parent born 1921-30	REF: 1931-1964	0.27	0.44
Dad is high school grad	REF: less than a high school education	0.23	0.42
Mom is high school grad	REF: less than a high school education	0.14	0.34
Has brother who is university grad	REF: no brother	0.23	0.42
Has brother who is not university grad	REF: no brother	0.33	0.47
Has sister who is university grad	REF: no sister	0.09	0.29
Has sister who is not university grad	REF: no sister	0.44	0.50
Child's yrs of education	Yrs of educ completed by child	13.41	2.18

Table 2. Full sample demographics.

	Tokyo (N =16)		Okinawa (N=55)	
	Number	%	Number	%
Female	12	.75	49	.89
Birth Year				
1911-1920	10	.63	18	.33
1921-1930	4	.25	10	.18
1931-1940	1	.06	15	.27
1941-1950	1	.06	12	.22
Education				
4-Year Degree	2	.13	6	.11
Junior College	1	.06	6	.11
Technical School	1	.06	3	.05
High School	6	.38	12	.22
Junior High	5	.31	28	.51
Missing	1	.06	--	--
	Average		Average	
Number of Siblings	4.4		4.8	
Number of Children	2.8		3.7	

Note: For the pre-war generation, elementary school is recorded as junior high, junior high as high school, and high school as junior college in this table.

Table 3. Multilevel models of children's educational attainment. Data: NF98.

Fixed Effects	Model 1	Model 2	Model 3
Intercept	10.67***	10.36***	9.88***
Female child	-0.47***	0.26	0.71
Log Family income	0.48***	0.50***	0.56***
2 siblings (ref=0)	-0.69***	-0.65***	-0.39
1 sibling (ref=0)	-0.21	-0.07	0.12
Lives in city	0.14*	0.17	0.19
Parent born 1921-30	0.29***	0.50***	0.60***
Mom is high school grad	0.43***	0.32*	0.41**
Dad is high school grad	0.99***	1.09***	1.25***
Family Income X Female		-0.06	-0.12
2 siblings X Female		-0.10	-0.42
1 sibling X Female		-0.29	-0.51*
Lives in city X Female		-0.08	-0.090
P.B. 1921-30 X Female		-0.45***	-0.57***
Mom h.s. grad X Female		0.22	0.15
Dad h.s. grad X Female		-0.22	-0.34*
Has brother who is university grad			-0.69***
Has brother who is not university grad			0.13
Has sister who is university grad			-0.60***
Has sister who is not university grad			0.02
Female X Brother, university grad			0.74***
Female X Sister, university grad			0.40*
BIC (smaller is better)	20953.6	20846.4	20026.1
N	5131	5131	4948

*p<.05, **p<.01, ***p<.001

Table 4. Actual Patterns of Educational Investment by Gender Attitudes and Valuation of Education (N=45).

	Utilitarian Valuation of Education	Broad Valuation of Education
Conservative Gender Ideology	12 families invested inequitably. 5 families invested equitably. 71% inequitable	8 families invested inequitably. 6 families invested equitably. 54% inequitable
Liberal Gender Ideology	2 families invested inequitably. 5 families invested equitably. 29% inequitable	0 families invested inequitably. 7 families invested equitably. 0% inequitable

Note: The respondent had to answer the questions regarding gender attitudes and valuation of education in order to be included. In mixed sex sibling sets, equitable investments include: parents investing equitably in sons and daughters (above a high school level) and investing more in daughters (above a high school level). Inequitable investments refer to when parents invest more in their sons than their daughters (above a high school level). In the case of families with only girls, equitable investments refer to when the parents send at least one daughter to a university and inequitable investments refer to when the parents do not send any of the daughters to a university.

Table 5. Investments within subgroups of the sample. (N=45)

		Utilitarian Valuation of Education		Broad Valuation of Education	
		# Inequitable	# Equitable	# Inequitable	# Equitable
Conservative Gender Ideology	Jr & 4-year university grads	2	1	0	2
	Technical school or less	10	4	8	4
	Born 1911-1930	7	4	4	3
	Born 1931-1950	5	1	4	3
	Dependent on pension	10	4	8	5
	Not dependent on pension	2	1	0	1
Liberal Gender Ideology	Jr & 4-year university grads	0	3	0	2
	Technical school or less	2	2	0	5
	Born 1911-1930	1	2	0	3
	Born 1931-1950	1	3	0	4
	Dependent on pension	2	4	0	7
	Not dependent on pension	0	1	0	0

Note: The definitions of equitable and inequitable investments used here are the same as in Table 4.