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Sons and Daughters: Effects of Children's Out-migration on Intergenerational Support in Rural China

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Abstract: Using data from the baseline and follow-up surveys of "Well-being of Elderly Survey in Anhui Province, China" conducted in 2001 and in 2003 respectively by the Institute for Population and Development Studies of Xi'an Jiaotong University, in conjunction with the University of Southern California, this paper employs the logistic random model to examine the gender differences in the effect of out-migration on intergenerational support in rural China. The results show that, the division of family support in rural China has not changed thoroughly under the out-migration of adult children. However, the gender differences on intergenerational supports between sons and daughters are reduced. While migrant daughters have greater probability of increasing financial support to their elderly parents, which narrows the gap between sons and daughters; migrant sons have less probability of increasing instrumental support to their elderly parents, which also narrows the gender difference of instrumental support. And as migrant daughter are more likely to increase the emotional support to their parents, the gap between sons and daughters on intergenerational emotional support is further widened.

Key Words: intergenerational support, out-migration, gender, China

Introduction

As a main approach to modernization, rural-to-urban migration can be classified into two phases-- temporal migration and permanent migration, the former of which is that surplus labor migrate from rural to urban areas or from agriculture to non-agriculture for new jobs, and the latter is that surplus labor originally in rural areas obtain non-agriculture employment, and migrate to urban areas and live there permanently. Because of the household registration (Hukou) system in China, the rural-to-urban migrants, so called "floating population" reside in cities without permanent legal status (Chan and Zhang, 1999). According to the 1% population sampling survey in 2005 by National Statistics Bureaus of China, the volume of Chinese rural-to-urban migration has reached 147 million, that is more than one tenth of the total Chinese population and three tenth of Chinese rural population were involved in rural-to-urban migration in 2005 (National Statistics Bureaus of China, 2006). Moreover, because most of migrants from rural areas are young adults, aging of China's population is more serious in rural areas than in urban. By the middle of this century, it is expected that the proportion of the population aged 65 years and older will reach 22 percent in cities and 26 percent in rural areas (Zeng, 2001). As families are the major support source for older individuals in rural areas -- that is, adult children serve as the primary providers of support to their elderly parents (Ikels, 1997; Lee and Xiao, 1998; Logan et al., 1998; Shi, 1993; Xu, 1995) -- massive out-migration of young labor may undermine the traditional family system of support and significantly affect the care of older parents remaining in rural areas.

There are two separate mechanisms for the relationship between adult children's out-migration and the support of older parents in the literature. The first is the vulnerability assumption proposed by the modernization and aging theory (Aboderin, 2004; Cowgill and Holmes, 1972). According to this theory, the process of urbanization and industrialization is accompanied by the transformation of the family structure from extended to nuclear family, the spatial dispersion of family, declined family functions (including old-age support), and declines in the status and roles of older adults (e.g. Benjiamin et al., 2000; Mason, 1982). Whereas the modernization and aging theory views the decline in old-age support as a corollary of the modernization process, the economics of labor migration theory (Stark and Bloom, 1985; Taylor et al., 2003) views migration as a household decision jointly made by movers and stayers to pursue maximum household interest rather than individual economic rationales. Accordingly, the migrant and the family, including the older parents left in rural areas, are actively involved in the migration process by sharing both the cost and return of the migration. Thus, the children's out-migration has a measurable and typically positive effect on older parents (e.g. Cai, 2003; Vanwey, 2004). A few studies have examined the association between children's out-migration and support of rural older parents in developing countries (Du and Du, 2002; Du et al., 2004; Knodel and Saengtienchai, 2005; Kuhn, 2005). However, the most relied on cross-sectional data, and the cause and effect can be confused in cross-sectional studies. It is not clear whether children's out-migration affects the support of parents, or whether the caregiving resources of parents trigger children's out-migration. In

addition, the most existing studies focus more on the individual types of support from the migrated children to their older parents (for example, remittance), while studies of multiple types of supports ((i.e., financial, instrumental, and emotional support), comparing the migrated children and children left behind are still lacking.

Moreover, in Chinese rural families, children's gender plays crucial role in their support for older parents. As the patriarchal family system has a profound influence on Chinese society, sons, rather than daughters, are expected to provide essential support for elderly parents in a traditional family (Yang, 1996). Therefore large gender division in the family support for older parents in Chinese families should be expected. However, due to the shifts of social and cultural context accompanying by the out-migration of young adult, the traditional gendered intergenerational support pattern might be expected to change.

Although there are many studies referring the intergenerational support at present, few studies have addressed the relationship of adult children's out-migration and support of older parents from a gender-based perspective. The purpose of this study is to examine whether sons' or daughters' migration has a differential impact on the support for older parents. Firstly, we compare the gender differences of the types of intergenerational support (financial, instrumental, and emotional support) and their changes among sons' and daughters' migration. Secondly, we examine gender difference of the influence of adult children's migration on intergenerational support to older parents. Lastly, implications for policy and future research are discussed.

Theoretical Model and Hypotheses

Patterns of intergenerational support

The patterns of intergenerational support, all of which demonstrate the exchange dynamics between older and younger generations, originated in the researches referring the redistribution of social resources from the perspective of economic exchange in the West. At present, three groups of theories of the family are relevant to the issue of intergenerational support -- the power and bargaining model, the mutual aid model and the altruism/corporate group model.

The existing studies on China indicate that the altruism/corporate group model best describes intergenerational transfers in Chinese families (Lee et al., 1994; Lee and Xiao, 1998; Shi, 1993; Song, 2008; Sun, 2002; Zhang and Li, 2004). Referring the transfers between generations, the distribution of family resource in Chinese traditional family manifests the principle of corporate group. For example, investing in a child's education is a strategy for collective interest of a family, as the children with higher education are generally apt to achieve success, and to provide more old-age supports (Frankenberg et al., 2002; Lee, et al., 1994; Whyte, 2003). In addition, since day-care in rural areas of China is scarce, older parents taking care of grandchildren so that adult children can obtain better wages is a shorter-term strategy to reach the same goal (Silverstein, 2007). Referring the division of old-age support between children, adult children provide differential type and amount of intergenerational supports to older parents, depending on their own resource. For example, migrant children significantly reduce instrumental support (i.e., the

hands-on support with personal care and housework) to their older parents, while increasingly compensate for the separation from parents by financial support, a portion of which may be transferred to other children who provide instrumental support. Zhang (2004) specifies the traditional corporate model put forward by western scholars, combining the empirical research results from foreign countries and domestic contexts in China. And altruism and son preference are distinguishing characteristics of the elderly in specified model, which is different from traditional corporate model. Based on this specified corporate group model, the present study tends to examine how children's migration has an impact on their support to older parents.

Explanations of gender division

As a complete theoretical explanation of gender division of intergenerational support in China has not been provided so far, according to three explanations, one or more of which is used by quantitative studies on the division of household labor (Finley, 1989; Godwin, 1991; Ross, 1987), we explore the explanation of gender division of intergenerational support referred to as relative resources, time availability, and socialization/ideology explanations.

The relative/external resources explanation builds on the work of Blood and Wolfe (1960), and asserts that the relative resources obtained externally determine power dynamics in the family. According to this explanation, individual with the most resources (e.g. education, earnings, occupational prestige) uses those resources to negotiate his/her way out of housework (Brines 1993). Therefore, adult sons,

commonly with higher education, earning and prestige, would be less involved in housework and caregiving.

The time availability (Hiller 1984), demand/response capability (Coverman 1985), and time constraints (Shelton and John, 1996) refer to an explanation that proposes that competing time and role demands determine the time available for tasks related to the family. According to this explanation, men and women participate in housework and caregiving to the extent that there are demands on them to do so and they have available time (Shelton and John, 1996). If this hypothesis is true, it would be expected that for men more than for women competing demands on their time would leave little time for the family and that, consequently, men would do less to satisfy the needs of older parents. However, those having available time would not be more involved in housework and caregiving. Green-Stein (2000) found that, even having more time, men with traditional gender role attitudes would not spend time on housework.

The socialization/ideology explanation suggests that gender-role attitudes learned in the socialization process influence the division of family (Condran and Bode, 1982). According to the ideology explanation, women and men with more egalitarian attitudes will have a more equal division of household labor than those with more traditional attitudes. However, as an abstract concept to be measured difficultly, gender ideology is usually substituted by the surrogate variable--the level of education, with a higher education indicating a weaker traditional gender ideology, and more equal sharing in family labor (Farkas, 1976). Seeming contrary to the relative resource

explanation, which particularly emphasizes the structural resources (that is the relative resources, e.g. the relative measure of education) considered in comparison with other family members, the ideology explanation emphasizes the absolute measure of individual educational level.

Many studies of old-age support indicate there is gender-based pattern of children's support for their older parents. Currently in most Chinese rural areas, sons are expected to provide fundamental support (including financial support, and instrumental support) for their older parents (Lee et al., 1994; Yang, 1996; Zhang and Li, 2004), while daughters tend to provide supplementary support for their parents with routine activities or emotional support (Lee et al., 1994; Yang, 1996; Sun, 2002), which is due that, rural women who participate mainly in unpaid household work and provide few contribution to household income have no formal obligations and actual abilities to their older parents. However, out-migration provides a dramatic shift for female migrants from inequitable gender division of labor. As a result of out-migration, women's social status and their power in family decision making are improved because of their increased participation in paid employment and other activities in the "public" sphere (Willis and Yeoh, 2000). On the other hand, as the traditional providers of caregiving to the elderly, women are likely to decrease the time spent on caregiving as a result of increased social participation (Bass and Noelker, 1997; Beiegel and Schulz, 1999; Koyano, 2000). Therefore, as migrant women's social and economic status improve, and consequently, the traditional gender division of labor becomes less strict, the traditional pattern of old-age support in the

Chinese patrilineal rural societies may change.

Children's out-migration and older parents

The existing researches referring the influence of out-migration on old-age support of rural family have not differentiated between temporal migration and permanent migration, but analyze vaguely the effect of these two types together. However, the different types of migration have differential effects on intergenerational transfers. In generally, leaving from villages for long and settling in the urban areas, permanent migrants leave skip-generation or empty-nested families behind in villages, and deceased potential provider of old-age support; while temporal migrants (floating population) usually stay in urban areas in short term, and continuously provide the financial, instrumental, and emotional support to their older parents left in villages. Moreover, characterized as younger-staff and intense economic motive (Du and Du, 2002), the floating population increase the family income immediately by remittance, which also improve the economic status of their older parents.

Thus, the impact of out-migration on family support in rural areas may differ by the types of migration of the children. Migrant children were defined as those who lived in different villages from their parents, in generally, due to work or due to domestic reasons (e.g. marriage, family division, and so on). The patrilineal family system in rural China shapes the gender-based pattern of living arrangement of the rural family: an adult son, no matter unmarried or married, lives with or closes to his parent in the same village; a married daughter usually lives with her husband family, which is not commonly in the same village where her parent's family live. Therefore,

the reason of children's out-migration differs by gender of adult children – work reason for adult sons, while marriage for adult daughters. However, currently in rural China, the great demand for female labor in urban areas also encourages millions of rural women to migrate from rural areas. Thus, it can be inferred that the migration for domestic reason is relatively steady and long-term, while the migration for work is short-term, during which the migrants are likely to return village due to personal or their parents' affairs. So analyses of the different types of migration are needed.

According to the two competing theoretical explanations above for the relationship between adult children's out-migration and support of older parents, there are both benefits and disadvantages for rural parents as a result of the rural-urban migration of adult children. For example, researchers found that older parents in rural areas usually live alone or with grandchildren, absence of care-givers dramatically reduces provision of daily care, damages emotional well-being of the elderly, and places on them an added burden of rearing grandchildren (Du et al., 2004; Zhang and Li, 2004). On the other hand, studies on the financial support of rural elders have consistently reported that migrant children increasingly compensate for the separation from parents by regularly sending back remittances (Du et al., 2004; Keasberry, 2001; Kuhn, 1999). Moreover, a few qualitative studies have revealed that most migrant children still provide long-distance emotional support or are actively involved in the caregiving process for their older parents. And rural parents may derive pride from their occupational or social success in an urban environment (Knodel and Saengtienchal, 2005), which benefits the emotional connection. In a word, empirical

studies on the massive rural-to-urban migration and older parents in China are limited, and findings are mixed. And there have been few studies that compare the effects of different types of adult children's migration on the intergenerational transfers to their older parents.

Hypotheses to be tested

Based on the theoretical analyses above, we propose the gender pattern of intergenerational support in Chinese rural elderly families: (1) intergenerational transfers in Chinese elderly families are best portrayed by the corporate group model; (2) because of gender differences of role and socioeconomic status, gender division should be considered; (3) rural-urban migration may have effect on traditional gender division of intergenerational transfers. A gendered perspective should be required in the analysis of the relationship between children's out-migration and intergenerational support (the financial, instrumental, and emotional support). Therefore, three testable hypotheses are following:

Hypothesis 1: Migrant daughters are more likely to provide increased financial support than migrant sons.

Hypothesis 2: Migrant daughters are more likely to provide increased instrumental support than migrant sons.

Hypothesis 3: Migrant daughters are more likely to provide increased emotional support than migrant sons.

That is, as the gender differences on financial and instrumental support between sons and daughters are reduced, the traditional gender division of old-age support in the

Chinese rural families, that is sons are expected to provide fundamental support to older parents, may change. However, as out-migration has positive effect more typically on the emotional connection between daughters and their older parents, the gap between sons and daughters on intergenerational emotional support is further widened.

Methods

Data

The data used for this study were drawn from "Well-being of Elderly in Anhui Province", a longitudinal survey jointly conducted by the Institute for Population and Development Studies of Xi'an Jiaotong University, in conjunction with the University of Southern California. The survey location, Anhui Province, was chosen specifically for its relatively high density of older adults and high levels of out-migration of working age adults (Chaohui Statistical Bureau, 2001), and thus is an ideal setting to study the implication of children's out-migration for older parents (Silverstein, Cong, and Li, 2006).

A stratified multistage method was used to select potential respondents within 12 randomly selected rural townships, from each of which six villages were randomly selected. The respondents were identified from all residents aged 60 and older with a small proportionate over-sampling of people 75 years of age and older. Of 1,800 individuals identified as eligible respondents, 1,715 completed the survey in 2001, a response rate of 95.3%. 1,391 respondents completed the follow-up survey in 2003.

After omitting respondents without children and cases with missing data on relevant study variables, 1,327 respondents were included in our analyses. From the children's perspective, the total number of observations of children-parent pairs, was 5218, including 2769 son-parent pairs (53.07%) and 2449 daughter-parent pairs (46.93%).

Measurement

Dependent Variables

The dependent variable, intergenerational support was subdivided into financial support, instrumental support, and emotional support. Differences between 2001 and 2003 support for the same child measured the changes of intergenerational support provided by adult children. Because the change of support was affected by the level at baseline survey in 2001, this level was also included in the analysis.

Financial support was assessed by answers to the question "*Did the child send you (or your spouse living with you now) money, food or gifts?*". This was a measure of the total amount received from each child during the past 12 months. If the respondents did not respond with the exact amount, the options were the following categories based on Chinese RMB currency: 0= "none", 1= "less than 50", 2= "50-99", 3= "100-199", 4= "200-499", 5= "500-999", 6= "1000-2999", 7= "3000-4999", 8= "5000-9999", 9= "More than 10,000". The log of the median value of each interval was taken as the amount of financial support from a child at baseline survey (in 2001). Comparing the amount in 2001 and in 2003, the change of financial support was coded as 0 if there was no increase (including decrease), 1 if there was an increase.

Instrumental support was reported as two kinds: (1) *household tasks, such as cleaning the house and washing clothes*, and (2) *personal care tasks, such as bathing and dressing*, each of which was recorded as four values: (1) Every day=4, (2) At least once per week=3, (3) Several times per month=2, (4) Seldom or None=1. The sum of the two kinds of assistance by one child was taken as the measure of instrumental support from a child to his/her elderly parent. Comparing 2001 and 2003, the change of instrumental support was coded as 0 if there was no increase (including decrease), 1 if there was an increase.

Emotional support was assessed using the three questions: (1) *Overall, how close do you feel to (this child)?* (2) *Overall, how well do you and (this child) get along together?* (3) *How much do you feel that (this child) would be willing to listen when you intend to talk about your worries and troubles?* The responses were coded as follows: 1="Not at all close/not at all well/not at all", 2="Somewhat close/somewhat well/somewhat", 3="Very close/very well/very much". An additive scale was computed, ranging from 3-9, with a higher score indicating a higher quality of parent-child relationship. The alpha reliability coefficient for these items was 0.86, 0.96 respectively in 2001 and in 2003. Comparing 2001 and 2003, the change of emotional support was coded as 0 if there was no increase (including decrease), 1 if there was an increase.

Dependent Variables

During the survey interval, the status of children's migration may change, which would influence immediately their intergenerational support. The change of migration

of children was measured with four dummy variables: (1) remaining in village, (2) out-migration for work, (3) out-migration for other reasons, and (4) return migration.

Control Variables

The main control variables were of two general types: (1) variables specific to adult children, including their personal characteristics and characteristics of their relationships with older parents; and (2) variables specific to older parents, including their personal characteristics and characteristics of their household structure.

Child-level.

The characteristics of adult children included age, marital status, education, career, and care for grandchildren received. The education represented the socialization/ideology explanation, and relative education represented the factor addressing the relative resources explanation (Blair and Lichter, 1991), which was measured by the relative level of education in comparison with other children in family, with two dummy variables: (1) not lower than average level of all children in family, and (2) lower than average level of all children in family. The change of career of children during survey interval included: (1) agricultural → agricultural, (2) agricultural → non-agricultural, (3) non-agricultural → non-agricultural, and (4) non-agricultural→agricultural. This dynamic variable addressed the time-available explanation. Care for grandchildren received was measured as the frequency with which "older parents provided child-care for the offspring of each adult child during the past year". This variable ranged from 0-6, with 0= “not at all”, 1= “seldom”, 2=”once per month”, 3= “several times per month”, 4= “at least once per week”, 5=

“every day, but not for the entire day”, and 6= “every day, for the entire day”. Grandchildren were treated in sets--as groups nested within the adult child who was their parent. Thus, a single value was ascertained for each set of grandchildren. Comparing 2001 and 2003, the change of grandchild-care was coded as 0 if there was no increase (including decrease), 1 if there was an increase.

Parent-level.

Variables describing older parents included age, marital status, SES (education, occupation and income), living arrangement and health status. As cross-sectional variables, age group (0= "60-69", 1= "70-79", 2= "80 or older"); education (0= “no formal education”, 1= “at least some formal education); occupation or previous occupation (0= “non-agricultural’, 1= “agricultural”) didn't change during the interval between baseline survey and follow-up survey. As the proportion of transformation is lower than 5%, marital status (0= “widowed, divorced, separated”, 1= “married, living with spouse”) was considered as cross-sectional variable. Parents’ income was determined by the total income that the respondent (and spouse, if married) had received from work or pension in the past year. As the income changed in the interval of two surveys, the change of income was measured with four dummy variables: (1) maintaining having no income, (2) having no income → having income, (3) maintaining having income, and (4) having income → having no income. The following are the possible changes in living arrangements during the survey interval included: (1) not living with children, (2) not living with children → living with children, (3) living with children, (4) living with children → not living with children.

Health status was measured as the sum of 11 items reflecting difficulty in performing two types of tasks: (1) personal activities of daily living (PADL, including bathing, dressing or undressing, walking around the room, getting out of bed, going to the toilet, and eating) (Katz 1963), and (2) instrumental activities of daily living (IADL, including preparing meals, shopping, doing housework, taking the bus or train, managing money). Both the PADL and IADL scale items were reliable at two wave, ranging from alpha = 0.88 to alpha = 0.96. As the health status in 2003 was compared to the status in 2001, both the change in functional health during the survey interval and the level in 2001 were included in our analysis.

The sample statistics were showed in Table 1 (the sample of children) and Table 2 (the sample of older parents).

--- Table 1 about here ---

--- Table 2 about here ---

Analytical Approach

With our interest in exchanges between individual children and older parents, as in most cases there were multiple children in each family, family heterogeneity had to be controlled in our study. Thus, we used a 2-layer random effects model in STATA (2005), a procedure suited to nested data. Since the outcome variables in this study were binary, a Generalized Linear Mixed Model, relied on logit as the link function and fitted a logit mixed model, was employed.

To examine the effects of changes of children's out-migration on intergenerational transfers by gender, we run models for sons and daughters separately. In each

regression, we evaluated the unique contribution of children's out-migration to the financial, instrumental, or emotional support provided by children after taking into consideration the demographic features of children and parents, and their expanding needs.

Results

We first examine variation in the amount of intergenerational support and its change provided by children based on their gender and out-migration. In Table 3, we show that there are differences in intergenerational support provided by children among types of children's out-migration in baseline survey. The financial support provided by children who out-migrate for work, no matter sons or daughters, is significantly more than that by other children, and financial support by daughters out-migrating for work (3.27) is more than that by sons out-migrating for work (3.08). Children who never out-migrate tend to provide most instrumental support (sons and daughters, respectively 0.78 and 0.33), the following are the children out-migrating for work (respectively 0.28 and 0.08), and the return children are least (respectively 0.20 and 0.03). Regardless of any type of children's out-migration, sons provide more instrumental support to their parents than daughter do, which indicates gender difference in instrumental support by children, while the reverse is reflected in emotional support. The emotional support by children who out-migrate for work, no matter sons (7.13) or daughters (7.48), is significantly more than that by other children. Moreover, grandchild-care received by children out-migrating for work

(sons and daughters, respectively 2.07 and 1.26) is significantly greater than that by other children. And grandparents are more likely to provide care to their paternal grandchildren than to their maternal grandchildren. As a whole, migrant children provide more financial support and emotional support, and less instrumental support, while children left do in reverse. As for gender difference, sons provide more instrumental support to their parents than daughters do, while daughters provide more emotional support with their parents than sons, but no gender difference in financial support.

--- Table 3 about here ---

Table 4 shows that, during the survey interval between 2001 and 2003, the percentage of change in intergenerational support of varied types of children's migration by gender. Though there is no significant difference in financial support, daughters except for return daughters are more likely to provide more instrumental support to their parents than sons do. 17.6 percent of return sons provide increased instrumental support, which is highest one among sons, while only 2.9 percent of sons out-migrating for other reasons provide increased instrumental support. However, 30.0 percent of daughters left provide increased instrumental support, higher than those of other daughters, while that of migrant daughters is lowest. With regard to emotional support by different types of children's migration, the percentage of sons who out-migrate for others reasons providing more instrumental support is highest (42.8%), while that of sons left is lowest (32.6%). However, the percentage of daughters left providing more instrumental support is highest (40.5%), while that of

daughters who out-migrate for work is lowest (34.7%). Moreover, the percentage of sons receiving increased grandchild-care from their older parents is higher than that of daughters, but significant between those of return children. As a whole, daughters are more likely to provide increased instrumental support to their parents than sons do, especially the daughter left in village, who also are more likely to provide increased emotional support than sons left do, while sons out-migrating for other reasons are more likely to increase emotional support than daughters of the same type.

--- Table 4 about here ---

Multivariate Models

The next sequence of models shows estimates from random effect logistic equations predicting the effect of children's migration on three transfers provided by adult children. Estimates of the likelihood of increase in financial support by gender are presented in Table 5. We see that sons who out-migrate for work during the survey interval have a greater probability of providing increased financial support than those who remained in the village (OR=1.379), while daughters who out-migrate for work and for other reasons both have a greater probability of providing increased financial support than those left in the village (respectively OR=1.805 and OR=1.433), which is deduced that the likelihood of migrant daughter who provide more financial support is higher than that of migrant sons. Moreover, daughters with relatively more education also have a greater probability of giving increased financial support (OR=1.470), but sons not. However, sons who receive more grandchild-care are more likely to provide increased financial support to their parents (OR=1.080).

--- Table 5 about here ---

Estimates of instrumental support provided by children reported in Table 5 show that out-migration reduces the likelihood of providing increased instrumental support to older parents. During the survey interval, sons who out-migrate for work are less likely to provide increased instrumental support than those who remained in the village (OR=-0.791), and those out-migrating for other reasons even more less than the latter (OR=-1.429). Similarly, Daughters who are away from their village for work or for other reasons during the survey intervals are less likely to provide increased instrumental support than those remaining in the village (respectively, OR=-0.622 and OR=-0.819). In addition, Daughters who switch from agricultural work to non-agricultural work or who remain in non-agricultural work have the lower probability of providing more instrumental support than those remaining in agricultural work (respectively, OR=-0.010 and OR=0.437), however, this change has little effect on sons. And daughters with higher level of grandchild-care by older parents are more likely to provide increased instrumental support to their parents (OR=1.156).

The results concerning emotional support show that out-migration enhances the emotional closeness between children and older parents. Sons who out-migrate for other reasons have a greater probability of increasing emotional support, and daughters who out-migrate for work or for other reasons, even return also are more likely to provide increased emotional support than those remaining in the village (respectively, OR=-1.958, OR=1.955 and OR=1.790), which suggests that

out-migration may have more significant effect on daughters' emotional connection with older parents. The higher the level of education of children, the higher is the likelihood of increasing emotional support, and sons with higher education have a greater probability of increasing emotional support than daughters. In addition, sons who receive more grandchild-care have a greater probability of increasing emotional support (OR=1.743).

Discussion

Considering the effects of characteristics of adult children and their parents, this study try to examine the longitudinal impact of children's out-migration by gender on three forms of intergenerational support for Chinese rural elders. The results show that, the gender division of family support in rural China has not changed thoroughly under the out-migration of adult children. However, owing to the change of factors effecting the gender division of labor (derived from the relative resources, time availability, and socialization/ideology explanations), the gender differences on intergenerational supports between sons and daughters are reduced, resulting in the role of daughters in regard to elderly family members has been enhanced. While daughters who migrate for work have greater probability of increasing financial support to their elderly parents, which narrows the gap between sons and daughters; migrant sons have less probability of increasing instrumental support to their elderly parents, which also narrow the gender difference of instrumental support. However, as migrant daughter are more likely to increase the emotional support to their parents, the gap between

sons and daughters on intergenerational emotional support is further widened.

The results of this investigation can be summarized from three forms of intergenerational support. First, out-migration increases the probability of increased financial support provided by adult children. With the change of economic status and expectation after out-migration, and the increase in the cost of time needed to provide service assistance, the division of intergenerational support should be adjusted among siblings to optimize the distribution of family resources. Therefore, in rural China where education attainments of adult children are commonly lower (mostly only high school or lower), the daughters with higher relative education in family are more likely to be away from their village, and to obtain better income, which consequently brings about an enhancement in their abilities of old-age support. In light of the these results, we infer that although son preference in the expectation that sons provide financial support to their older parents, for the likelihood of increasing financial support in the future, sons are inferior to those daughters whose socioeconomic status improve as a result of out-migration. Thus, the migrant daughters have more probability of increasing financial support to their older parents than migrant sons do, which narrow the gender difference of intergenerational financial support

Second, out-migration reduces the probability that instrumental support is provided by children. As the instrumental assistance is restricted by time or space availability, adult children who are employed in non-agricultural work have more fixed working time and less time available for household work and caregiving than children engaged in agricultural. And according to the results of our study, daughters

who are non-agricultural workers are less likely to provide increased instrumental support, while the change of time or space availability accompanying career transitions has little effect on change of instrumental support by sons. It may be because that, alhough sons have primary responsibility for caregiving, their spouses, daughters-in-law, occupy a particular place in providing assistance (Liu and Kendig, 2000). Therefore, the sons migrating permanently for other reasons (e.g. marriage, family division, and so on) have lowest probabilities of providing increased instrumental support. However, controlling the variables of gender division of labor and other needs, out-migration diminishes more probabilities that sons provide increased instrumental support, which reduces the traditional gender division of instrumental support.

Third, out-migration improves the emotional closeness between children and older parents. This is because that, with children's out-migration which commonly reduces the possibility of some trifles of conflict in families, the division of supports to older parents among children, especially between children remaining in the village and migrant children, is strengthened; on the other hand that, out-migration brings about the expectation of "bringing honors to ancestors", which enhance the family cohesion too. In addition, the result shows that the emotional support by children is affected by gender ideology of the adult children -- the higher the level of education of children, that is the weaker traditional gender ideology, the higher is the likelihood of increasing emotional support. Further, sons with higher education have a greater probability of increasing emotional support than daughters, suggesting that gender

ideology factors have greater effects on emotional support by sons than by daughters. This may be a result of selection for out-migration, that is, children with higher education are more likely to leave their village for a job; or alternatively, people with higher education may more easily adopt modern notions (sons' level of education are commonly higher than that of daughters). Considering the gender ideology of children, the migrant daughters have more probability of increasing emotional support to their elderly parents than migrant sons do. Therefore, the gender gap of emotional support between generations is apparently weakened.

So, what are the implications of these findings above? This study significantly expands previous research by using a longitudinal data and help policy makers and service providers better understand the role of massive out-migration in reshaping rural families and support sources of older parents. In the developing world such publicly funded social security is either nonexistent or insufficient to meet the needs of most older adults, particularly rural elders (Bongaarts and Zimmer, 2002), families, especially adult children, represent the main source of old-age support for parents. Massive rural-to-urban migration may weaken these arrangements and significantly affect the care of older parents remaining in rural areas. On other hand, increasing income and more women engaged in paid-work, as result of rural-urban migration, promote the change of traditional division of intergenerational support. Together with the two points above, this study suggests that, the assumption of undermining of increasing out-migration to old-age support in rural China maybe exaggerated, however, out-migration of children has differential effects on intergenerational

support by gender. Although our analysis reveals that the traditional patrilineal pattern of old-age support is still dominant in rural society, out-migration of rural females helps to enhance the status of women in family and society, and to weaken the gender difference in old-age support.

This study has several limitations. One limitation is that the flows of intergenerational transfers from older parents to children were not considered. And net flows of support between generations should be analyzed in the future study. Another is an inevitable limitation with respect to the longitudinal research. Our analyses were limited to the elderly who completed all two survey waves. Excluding those vulnerable ones may underestimate the effect of out-migration on the intergenerational support.

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Table 1 Characteristics of Adult Children (N=5218)

Variables	Sons	Daughters
Intergenerational support		
Change of financial support: *No increase*	0.50	0.51
Increase	0.50	0.49
Change of instrumental support: *No increase*	0.90	0.85
Increase	0.10	0.15
Change of emotional support: *No increase*	0.65	0.64
Increase	0.35	0.36
Financial support in 2001	2.63	2.62
Instrumental support in 2001	0.47	0.09
Emotional support in 2001	7.13	7.48
Out-migration of children		
Remaining in village	0.39	0.14
Out-migration for work	0.37	0.20
Out-migration for other reasons	0.16	0.61
Return migration	0.08	0.05
Child-level variables		
Age	39.51	39.31
Marital status: *Unmarried*	0.24	0.18
married	0.76	0.82
Education: *Illiterate*	0.19	0.55
Primary school	0.36	0.28
Middle school and higher	0.45	0.17
Relative Education: *Not higher than average level of all children in family*	0.39	0.76
Higher than average level of all children in family	0.61	0.24
Occupation: *Agricultural work→Agricultural work*	0.39	0.56
Agricultural work→Non-agricultural work	0.13	0.11
Non-agricultural work→Non-agricultural work	0.39	0.24
Non-Agricultural work→agricultural work	0.10	0.09
Grandchild-care received in 2001	1.38	0.40
Change of Grandchild-care received: *No increase*	0.90	0.96
Increase	0.10	0.04
N	2769	2449

Table 1 Characteristics of Older Parents (N=1327)

Variables	Older Fathers	Older Mothers
Age group: *60-69*	0.58	0.41
70-79	0.38	0.43
80+	0.04	0.16
Marital status: *Unmarried*	0.30	0.56
married	0.70	0.44
Education: *Illiterate*	0.59	0.94
Literate	0.41	0.06
Occupation: *Agricultural work*	0.91	0.95
Non-agricultural work	0.09	0.05
Income: *No →No*	0.29	0.59
No→Yes	0.07	0.06
Yes→No	0.13	0.13
Yes→Yes	0.51	0.22
Living arrangement: *Continuing to live apart from children*	0.24	0.19
Not living with children→Living with children	0.10	0.07
Continuing to live with children	0.53	0.69
Living with children→Not living with children	0.13	0.05
Functional status	1.23	2.98
Change of functional status: *No decline*	0.73	0.60
Decline	0.27	0.40
N	601	726

Table 3 Gender difference in intergenerational support between children and older parents in 2001 (N=5218)

Intergenerational Support	Sons (Mean)	Daughters (Mean)	Gender Difference (*t* test)
Financial support			
Total	2.63	2.62	ns
Remaining in village	2.31	2.26	ns
Out-migration for work	3.08	3.27	+
Out-migration for other reasons	2.46	2.51	ns
Return migration	2.45	2.41	ns
Variance of out-migration	***	***	
Instrumental support			
Total	0.47	0.09	***
Remaining in village	0.78	0.33	***
Out-migration for work	0.28	0.08	**
Out-migration for other reasons	0.25	0.04	***
Return migration	0.20	0.03	+
Variance of out-migration	***	***	
Emotional support			
Total	7.13	7.48	***
Remaining in village	7.13	7.34	*
Out-migration for work	7.27	7.68	***
Out-migration for other reasons	6.86	7.44	***
Return migration	7.03	7.44	***
Variance of out-migration	***	**	
Grandchild-care			
Total	1.38	0.40	***
Remaining in village	1.02	0.75	*
Out-migration for work	2.07	1.26	***
Out-migration for other reasons	0.55	0.04	***
Return migration	1.63	0.42	***
Variance of out-migration	***	***	
N	2769	2449	

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$； + $p < 0.1$; n.s., not significant.

Table 4 Gender difference in the change of intergenerational support between children and older parents (N=5218)

Change of Intergenerational Support	Sons (%)	Daughters (%)	Gender Difference (Chi-squared test)
Financial support			
Total	49.6	49.2	ns
Remaining in village	49.8	49.0	ns
Out-migration for work	50.0	47.7	ns
Out-migration for other reasons	46.9	50.3	ns
Return migration	52.3	43.1	ns
Variance of out-migration	ns	ns	
Instrumental support			
Total	10.2	14.6	***
Remaining in village	17.2	30.0	***
Out-migration for work	4.1	11.6	***
Out-migration for other reasons	2.9	11.6	***
Return migration	17.6	19.5	ns
Variance of out-migration	***	***	
Emotional support			
Total	34.8	36.1	ns
Remaining in village	32.6	40.5	**
Out-migration for work	32.8	34.7	ns
Out-migration for other reasons	42.8	35.6	**
Return migration	38.7	35.8	ns
Variance of out-migration	**	ns	
Grandchild-care			
Total	9.7	3.8	***
Remaining in village	5.7	4.2	ns
Out-migration for work	16.7	15.1	ns
Out-migration for other reasons	0	0	ns
Return migration	16.2	3.3	***
Variance of out-migration	***	***	
N	2769	2449	

注: + p <0.1; *p < 0.05; **p < 0.01; ***p < 0.001

Table 5 Random effects logistic models predicting children's out-migration on intergenerational transfers by gender (N=5218)

Independent Variables	Financial Support		Instrumental Support		Emotional Support	
	Sons	Daughters	Sons	Daughters	Sons	Daughters
Out-migration: *Remaining in village*						
Out-migration for work	1.379*	1.805**	-0.791***	-0.622***	1.319	1.958**
Out-migration for other reasons	1.008	1.433*	-1.429***	-0.819***	1.799***	1.955***
Return migration	1.166	1.098	0.895	0.221*	1.413	1.790*
Intergenerational support						
Financial support in 2001	0.430***	0.098***				
Change of financial support: Increase					1.842***	1.932***
Instrumental support in 2001			0.813**	0.495**		
Change of instrumental support: Increase					1.478+	1.997***
Emotional support in 2001					-0.095***	-0.440***
Change of emotional support: Increase	1.356**	1.344*	0.965	1.066		
Child-level variables						
Age	1.011	1.013**	0.955***	0.981+	1.059***	1.096***
Marital status: Married	1.156	1.126	0.647	0.819	1.089	1.489*
Education: Primary school	1.365+	1.167	0.576	0.812	1.942***	1.689**
Middle school and higher	1.519*	0.994	0.705	1.168	2.087***	1.924**
Relative Education:						
Higher than average level of all children in family	0.976	1.470*	0.971	0.812	0.798	1.016
Occupation: (*Agricultural work→Agricultural work)*						
Agricultural work→Non-agricultural work	0.990	1.293	0.709	0.010**	0.871	1.336
Non-agricultural work→Non-agricultural work	1.173	1.577**	0.431+	0.437*	1.152	1.219
Non-Agricultural work→agricultural work	1.012	0.605+	1.075	0.775	1.334	1.460
Grandchild-care received in 2001	1.080**	1.048	1.010	1.156*	1.093**	1.085
Change of Grandchild-care received: Increase	1.164	1.614+	0.596	1.345	1.743**	1.762+
Parent-level variables						
Age group: 70-79	1.251	1.045	1.050	0.570	0.962	1.248
80+	1.345	0.588	1.876*	0.632	1.342	1.294
Gender: Female	0.870	1.157	0.862	0.900	1.448*	1.567*
Marital status: Married	1.054	1.722**	0.336*	0.177**	2.188***	2.779***
Education: Literate	1.202	1.028	0.925	0.993	1.678**	1.832**
Occupation: Non-agricultural work	1.283	1.161	0.793	1.187	1.049	1.022
Income: *(No →No)*						
No→Yes	0.138**	0.883	-1.098***	0.900	0.989	1.151
Yes→No	1.317	1.108	1.058	0.517	1.295	1.813*
Yes→Yes	0.446**	0.867	0.540	0.567	1.243	1.500+
Living arrangement: *Continuing to live without children*						
Not living with children→Living with children	1.176	1.216	1.357	1.205	1.413	1.658+
Continuing to live with children	1.262	1.652**	1.063	0.874	2.260***	2.715***
Living with children→Not living with children	1.302	1.011	-0.165*	0.187+	1.451	2.390***
Functional status	1.016	0.995	1.139***	1.147***	1.043	1.004
Change of functional status: Decline	0.707	0.666*	2.241***	2.362***	1.198	0.837
N	2769	2449	2769	2449	2769	2449
Wald chi-square	249.05***	264.36***	544.09***	500.64***	475.07***	468.46***
Df	29	29	29	29	30	30
Rho	0.444	0.465	0.515	0.536	0.534	0.567

(1)The reference categories of the categorical variables are omitted, including no increase of financial support, no increase of instrumental support, no increase of emotional support, unmarried, illiterate, not higher than average level of all children in family, no increase of grandchild-care, 60-69, male, unmarried, illiterate, agricultural work, and no decline of functional status.

(2) N is the total number of observations.
(3) *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$