Urbanization, female employment, and family care choice

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Abstract

This paper studies new changes in elderly care in urban areas against the background of population aging with data from the China Social Survey 2021. The study revealed that urban families mainly adopt two models—the "living-with-the-elderly" model and the "providing-economic-support" model—and that there is a substitution effect between the two models. Regarding individual characteristics, younger individuals with higher education levels tend to use the providing-economic-support model instead of the living-with-the-elderly model. In terms of family features, the greater the number of underage children in a family is, the greater the probability of giving economic support and the lower the probability of living with elderly people, reflecting a family resource allocation model centered on "children". This paper further explores the impact of urban female employment on family care model choice and finds that employed women are more inclined to use economic support instead of living with elderly people. The study suggested that the government should gradually improve the public resource support system, promote community service infrastructure development, and expand professional service supply capabilities.

Keywords: Economic support model, Living with the elderly model, Care deficit, Substitution effect

Research background

Over the past 20 years, China's aging rate has grown rapidly. In 2000, the proportion of people over 65 years old was 7.0%, while by 2020, the proportion of people over 65 years old had increased to 13.5%. China has become a moderately aging society as a whole.[1]

China's economic development shows an urban–rural dual economic structure, and the speed and degree of aging are also different in urban and rural areas. From 2000 to 2010, the aging rate in cities was greater than the overall aging rate in China, while from 2010 to 2020, the aging rate in cities decreased. By 2020, the urban aging rate was 10.78%, 2.72% lower than the national aging rate. The aging rate in rural areas, however,

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[1] *Note* According to the United Nations, a mildly aging society means that the proportion of the population above 60 years old exceeds 10% and that above 65 years old exceeds 7%; a moderately aging society means that the proportion of the population above 60 years old exceeds 20% and that above 65 over 14%; a severely aging society means above 60 over 30% and above 65 over 21%.
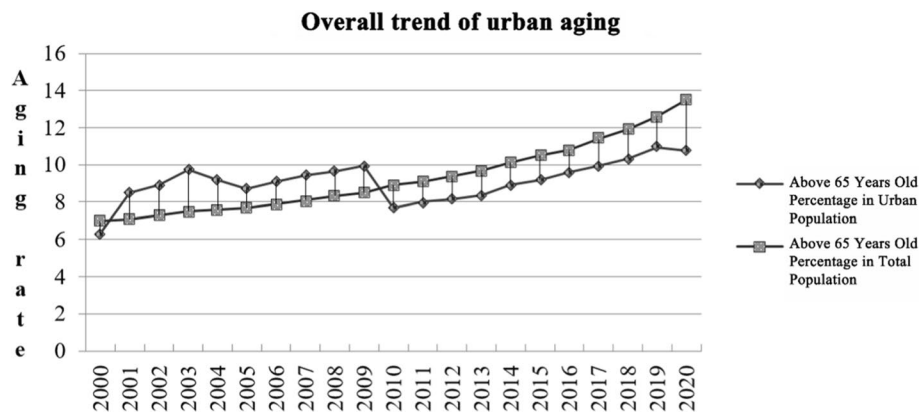
Overall trend of urban aging

Fig. 1 Overall trend of urban aging. *Note* China's population data are from China Population Statistic Yearbook 2001–2021. https://data-cnki-net-s.vpn.ucass.edu.cn/Yearbook/Single/N2022040097

is higher than the national rate, showing a difference from the aging structure in developed countries. In the process of urbanization, a large number of young and middle-aged people purchase houses in cities or move to large cities for work, which to a certain extent offsets the aging population structure of cities, but the aging trend in rural areas is further aggravated (Fig. 1).

The population structure is closely related to the level of economic development. Over the past 20 years, there has been a large regional imbalance in China's economic development, which has also had a great impact on the population structure. According to the statistical results, the aging level in 2000 was nearly the same in all regions. However, by 2020, there was a large aging gap among different regions. The aging rate of cities in Northeast China is the highest, reaching 14.86% in 2020; the rate in the western region is the lowest, at only 9.46%, and those in the eastern and central regions are in the middle. In the past 20 years, cities in northeast China have experienced stagnated economic development. In 2021, the GDP of the three provinces in Northeast China totaled RMB 5.57 trillion, accounting for only 4.9% of the national GDP, less than half of that of Guangdong Province. The sluggish economy in this region has caused a large loss of the youth population, resulting in a faster rate of aging than that of most provinces in China (Fig. 2).

In traditional families, women carry the burden of elderly care and childcare responsibilities. As modernization progresses, women are increasingly leaving their homes to engage in the labor market, leading to the erosion of traditional familial roles. For a long time, social policies have clearly separated work and family into two distinct areas. In the context of increasing female employment, the traditional family care model has become less sustainable.

This study uses data from the 2021 China Social Survey (CSS) to examine the changes in family elderly care service models during current urban development in China. It explores the shifts in urban families' responses to elderly care demands from the perspectives of living arrangements and economic support.
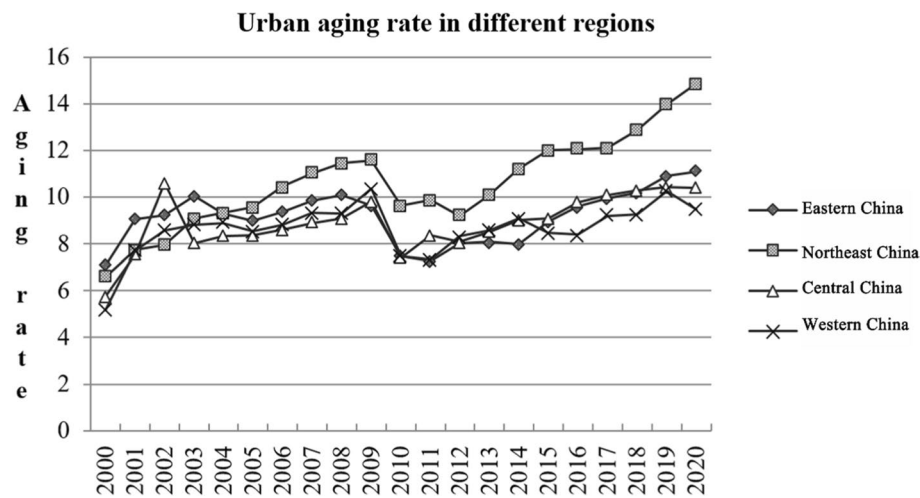
Fig. 2 Urban aging in different regions. *Notes* Eastern Region: Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, and Hainan; Central Region: Shanxi, Anhui, Jiangxi, Henan, Hubei, and Hunan; Western Region: Mongolia Autonomous Region, Guangxi Province, Chongqing Province, Sichuan Province, Guizhou Province, Yunnan Province, Tibet Autonomous Region, Shaanxi Province, Gansu Province, Qinghai Province, Ningxia Hui Autonomous Region, and Xinjiang Uygur Autonomous Region; Northeast China: Liaoning Province, Jilin Province, and Heilongjiang Province. Source: China Population Statistic Yearbook 2001–2021

Literature review and research questions

Two family care models: living with the elderly and providing economic support

Since the 1990s, a tendency has been observed that Chinese families are built around core members. Wang (2020) revealed changes in the structure of urban families in China by using data collected from population censuses since 1982. Since the 1980s, the trend in the structure of urban families in China has been continuous. Birth control, old-age security, housing reform, and other policies have had significant impacts on the structure of urban families. Zhang and Wang (2022) revealed the latest situation of the family structure in China based on the data of the seventh population census and the CSS2021. The average number of family members in China decreased to 2.62 in 2020, 0.48 fewer than that in 2010. This change means that the family structure in China has transitioned from three people to two people. The shrinking of family structures also reflects changes in elderly living arrangements. According to census data from 1982 and 1990, the proportions of elderly people living alone and living with their spouses were 22.8% and 25.3%, respectively. Together, these two groups accounted for nearly 50% of elderly households.

The fact that adult children do not live with their parents does not necessarily mean a breakdown in family unity. This is one of the major differences between Chinese family structures and Western family structures. Zuo and Zheng (2011) noted that more than two-thirds of rural elderly people rely primarily on financial support from their children. Zhang (2012) has also found that there is a kind of intergenerational reciprocity in economic support. If grandparents take care of their grandchildren, they are more likely to receive financial support from their adult children. From an individual perspective, the number of children is an important factor in determining whether and how much

economic support parents receive. Some studies suggest that the more children one has, the more economic support parents receive (Liu 2004), while others believe that the number of children does not significantly affect the economic support received by elderly people (Ci and Ning 2013). Second, the economic situation of the children and their economic support for their parents show the same direction of change, meaning that the higher the children's income is, the more financial assistance they provide to their parents (Gui and Ni 1995). Zissimopoulos (2001) used data from the Health and Retirement Study (HRS) in the United States to show that an increase in the wealth and income of children leads to an increase in private transfers to parents, and when children's wages increase, their financial support for parents also increases, but at the same time, they reduce the time spent caring for them. McGarry and Schoeni (1995), and Sloan and colleagues (2002), using the same health and retirement study (HRS) data, found that household income and wage growth have a positive influence on providing financial assistance to parents.

The relationship between living with the elderly and providing economic support

Most studies have focused on the factors influencing children's living arrangements and economic support separately, with less discussion about the relationship between the two. From the perspective of opportunity cost, when facing elderly care needs, children may have to choose between providing money and living with their parents. In the process of urbanization and the increasing employment of women, there is a trend of economic support replacing cohabitation and direct care (Yao 2003). In conditions of limited family resources, children may need to make rational choices based on their socioeconomic characteristics to determine the optimal care model. They may either choose to increase their labor income through employment and provide financial assistance to the elderly as a substitute for coresiding and providing direct care, or they may opt to live together with their elderly parents to increase direct care, substituting for financial support. Bonsang (2007) concluded that these two methods show a trade-off relationship based on the Survey of Health, Aging and Retirement in Europe (SHARE).

The most significant factor influencing adult children's caregiving decisions is employment, especially female employment, which has a decisive impact on choices regarding family caregiving. With the development of urbanization, female labor force participation rates have been steadily increasing, and an increasing number of women are pursuing careers. According to World Bank data from 2021, China hasa high female labor force participation rate of 62%, which is well above the global average of 46%. According to the report "China Women's Development Outline (2011–2020)", published on the website of the National Bureau of Statistics, in 2020, there were 67.79 million women employed in urban units, an increase of 19.17 million compared to 2010, representing 39.5% growth. Female employees have significantly improved their income and social status. As an increasing number of women participate in the labor force, the choice between living with their elderly parents and providing economic support becomes a crucial issue.

This study primarily focuses on the differentiation of urban care models within the context of contemporary modernization. Previous research on family caregiving models tended to either focus on living with elderly people or on economic support, often not considering both caregiving approaches within the same framework. Based on data from the 2021 China Social Survey (CSS), this study aims to address three key questions:

(1) What are the factors affecting urban families' decisions to live with elderly people and provide economic support? What roles do the characteristics of adult children and families play in this decision?
(2) What kind of relationship exists between these two caregiving models, and is there a substitution or complementarity relationship? What factors impact the relationship between the two?
(3) The paper analyses the influence of female employment, which is the core factor affecting family functions, on family decisions in the two models.

Model and data
Model
This study employs the probit model to analyze family care decision behavior. The assumption is that adult children either live with elderly parents or provide them with economic support. Differences in caregiving model choices may exist among children of varying socioeconomic status. Some may opt to live with elderly people, while others may prefer the economic support model. There is a correlation between the two decisions, which might be either substitutive or complementary. In empirical models, it is essential to account for the correlation between the two decisions. Regressing the two decisions separately could lead to estimation biases and inconsistency due to correlated errors, as well as reduced efficiency (Zhu et al. 2021). To address this issue and provide a more accurate estimation of the relationship between these two caregiving models, the study further employs a bivariate probit simultaneous equation model.

$$s^* = \beta_1 x^k + \beta_2 x^f + \varepsilon \text{ if } s^* > 0, \text{ then } s = 1, \text{ else } s = 0$$

$$t^* = \alpha_1 x^k + \alpha_2 x^f + \eta \text{ if } t^* > 0, \text{ then } t = 1, \text{ else } t = 0$$

$$E[\varepsilon] = E[\eta] = 0$$

$$\text{Var}[\varepsilon] = \text{Var}[\eta] = 1$$

$$\text{cov}[\varepsilon, \eta] = \rho$$

where the latent variables s^* and t^* represent living with elderly people and providing economic support, respectively, and x^k and x^f represent children's characteristics and family characteristics, respectively. ρ represents the correlation coefficient between the two error terms. If ρ is statistically significant and $\rho > 0$, then urban families exhibit a

complementary effect on their decisions to live with elderly people and provide economic support. If ρ is statistically significant and $\rho < 0$, it suggests that urban families demonstrate a substitutive effect on their decisions regarding living with elderly people and economic support. If $\rho = 0$, there is no relationship between family decisions on living with elderly people and economic support, allowing for separate estimations using single-variable probit models.

Data

The data used in this article are from the China Social Survey (CSS), which is a national probability sample household survey initiated by the Institute of Sociology at the Chinese Academy of Social Sciences in 2005. This survey is conducted every two years and aims to provide detailed and scientifically based information for social science research and government decision-making by conducting long-term longitudinal surveys on various aspects of the Chinese population, including labor and employment, family, social life, and social attitudes. Its purpose is to gather data on social changes in transitional China, offering valuable insights into the country's societal transformation for social science research and policy decisions.

CSS2021 is the eighth wave of the China Social Survey (CSS), and its research theme is "Social Quality and Modernization." The survey's content covers various modules, including family, employment, economic status, living conditions, social security, social values, social assessment, social participation, political participation, and volunteer service. The CSS2021 survey included household surveys in 592 villages and urban neighborhoods across 30 provinces/cities/autonomous regions in China. A total of 10,136 eligible survey questionnaires were collected. A total of 5,644 respondents were from urban areas, and 4,492 were from rural areas. This study primarily focuses on the analysis of urban family samples.

Variable settings

Dependent variables

This study aims to analyze the changes in caregiving decisions within urban households, taking the family as the unit of analysis. The CSS survey primarily focuses on adults in both urban and rural areas, covering individuals between the ages of 18 and 69. To analyze the choice of caregiving models within families, the data from the CSS survey underwent some transformations. The first dependent variable is the "living with the elderly model". Considering the caregiving needs of elderly people, this study defines individuals who require caregiving resources as those aged 70 or older. The presence of individuals aged 70 or older within the household was used as an indicator of living together (if there was an elderly person aged 70 or above in the household, living with the elderly individual = 1; otherwise = 0).[2] The second dependent variable is the "providing economic support model", which primarily examines whether families provide financial support to elderly people (if adult children provide financial support to non-coresiding elderly family members, providing economic support = 1; otherwise = 0).

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[2] Considering the limited number of elderly samples aged 80 and above in the CSS survey, it is reasonable to set the age threshold for elderly caregiving at 70 years and older.

Independent variables

The core independent variables in this analysis include individual characteristics, family characteristics, and regional variables. The individual variables include the birth cohort, education level, and economic income of adult children. Family characteristic variables include family income, assets, and whether the family has minor children. In addition to these factors, the article pays special attention to regional differences by categorizing the sample into four regions (eastern, central, western, and northeastern regions).

Changes in elderly care models of urban families

Direct elderly care: living with the elderly

Zhang and Wang (2022) analyzed the intergenerational structure of families by using data from the CSS2021. This study is based on statistics on family size and the intergenerational structure of families. From the perspective of family size, the sample families are mainly composed of two and three family members, accounting for 25% and 22%, respectively, together accounting for 47% of the total families. Families aged 60 years and older were selected from the whole sample, and further analysis of the size of families living with these families was performed. By comparison, the size of families with members 60 years and older is larger. Five-person families account for 23%, and six-person families account for 35%. The two account for 58% of all the families living with elderly people. In families living with the elderly 70 and above, five-person families account for 25.59% and six-person families account for 37.90%, which together account for 63.49% of the families living with elderly individuals. The average size of families with 60-year-old or older elderly individuals was 4.9, and the average size of families with 70-year-old or older elderly individuals was 5.2. With the increase in the age of elderly people living together, the family size gradually increased from 4.9 to 5.2, which may reflect the cooperation of family members in performing the care responsibility (Table 1).

Second, this study examines the living patterns of elderly people. The results show that families with members 60 years of age or older are mainly three-generation families, followed by two-generation families. The above two stand at 21% and 61%, respectively. There has been an increase in the proportion of multigenerational households living

Table 1 Descriptive statistics of urban family size in 2021 (%)

Investigation category	Family size of all the sample families	Family size of families with member 60 years and above	Family size of families with members 70 years and above
Type			
One-person families	12.22	1.79	0.09
Two-person families	25.33	13.97	9.13
Three-person families	21.84	11.61	9.60
Four-person families	17.62	14.84	17.69
Five-person families	10.53	22.92	25.59
Families with six persons and above	12.47	34.87	37.90
Total	100	100	100

Table 2 Descriptive statistics of intergenerational structure of urban families in 2021 (%)

Investigation category	Intergenerational structure of all the sample families	Intergenerational structure of urban families with member 60 years and above	Intergenerational structure of urban families with 70 years and above
Type			
One-generation families	30.48	12.31	5.55
Two-generation families	38.20	20.91	16.27
Three-generation families	23.58	60.76	65.19
Four-generation families	1.40	6.02	12.18
Total	100	100	100

with elderly people aged 70 years and above, with three-generation and four-generation households accounting for 65% and 12%, respectively. The two figures show that the family still shoulders the core responsibility for care services in cities. In addition, 12.31% of those aged 60 years and above lived independently, and only 5.55% of those aged 70 years and above lived independently. As the age of elderly people living in urban families increases, the major intergenerational structure of families changes from two- and three-generation families to three- and four-generation families, which is inconsistent with the overall family structure. Assuming that elderly people over 70 years of age need care, it is very likely that the family members living with them are the direct caregivers of elderly people. In terms of the composition of families with members 70 years and above, the two-generation families are mainly composed of respondents aged 50 years old (average age of 49 years old) and parents over 70 years old; the three-generation families are respondents (average age of 43), parents over 70 years old, and children; and the four-generation families are traditional family structures with four generations living in one house, namely, respondents (average age of 51), parents over 70 years old, children, and grandchildren. The four-generation families account for 12.18% of urban families, nearly one-fourth of the total. From the above results, it is inferred that the sandwich family model, i.e., families with aged parents and children, is the mainstream living pattern of urban families with elderly people (Table 2).

Indirect elderly care: providing economic support for the elderly

The care needs include three aspects, namely, daily care, financial support, and emotional comfort. Adult children are an important source of financial support for elderly people (Du et al. 2016). In the process of urbanization, the nucleation of family structures is becoming increasingly obvious, yet it is difficult for adult children to provide direct daily care for elderly people. As a result, traditional care is often replaced by transfer payments (Xu 2015).

In the CSS2021 questionnaire, children were asked about "expenditure on supporting or caring for relatives who were not living together", and the results reflected that adult children fulfilled their elderly support responsibilities through financial support rather than direct care. According to statistics, 32.21% of children in urban families provide financial support to elderly people. There are differences among families with different

Table 3 Descriptive statistics of economic support provided by urban families

	Urban families	Low-income families	Middle-income families	High-income families
Providing economic support (%)	32.21	23.56	34.16	39.17
Families' transfer payment (RMB)	2773.16	1391.76	2478.81	4456.52
Living with the elderly (%)	40.59	45.32	41.88	34.04

income levels. The proportion of low-income families providing financial support is the lowest, accounting for 23.56%, while that of high-income families is the highest, accounting for 39.17%. In terms of absolute amount, there are also significant differences between low-income families, middle-income families, and high-income families. The average economic support number of low-income families is RMB 2,773, while that of high-income families is RMB 4,456, nearly twice that of low-income families (Table 3).

At the same time, it is found that different classes have opposite orientations in choosing "living with elderly people" or "providing economic support". The proportion of low-income families that choose to live with elderly individuals reaches 45.32%, that of middle-income families is 41.88%, and that of high-income families is only 34.04%. Table 3 shows the substitution effect of modern families in choosing old-age care. They either choose to live together or provide financial support to gain traditional moral legitimacy. Low-income families tend to live with elderly people to fulfill their care responsibilities, while high-income families are inclined to provide more financial support.

Factors influencing the two elderly care choices of urban families

In this section, we analyze the factors influencing the choice of elderly care models in urban families through a bivariate probit model, discussing the relationship between the "living with the elderly" and "providing economic support" models. The two dependent variables are "whether there are elderly people aged 70 and above in the family" and "whether economic support is provided."

Factors influencing living with elderly people and providing economic support

The first dependent variable in the equation is "whether there are elderly people aged 70 and above in the family". Among the individual influencing factors, age and education level have a significant impact on living with one's parents. Different generations of adult children have different effects on living with parents. Taking adult children born before 1970 as the reference group, younger adult children had a lower probability of living with elderly parents, with a 29.6% decrease for those born between 1980 and 1990 and a 36% decrease for those born after 1990. Education is also an important factor influencing whether individuals live with elderly people. Compared to individuals with a primary education or lower, those with a high school education have a 21.6% lower probability of living with parents, and those with a college degree or higher have a 20.4% lower probability.

Family structure is also an important factor influencing living arrangements. The regression model shows that, compared to families without underage children, families with two or more underage children have a 14.8% lower probability of living with parents. Zhong Xiaohui's research suggested that most urban families are not able to adequately handle the dual caregiving pressures of elderly and underage children and thus face a choice between "caring for the elderly or caring for the young." When the caregiving needs of elderly people and children overlap, the middle generation tends to adopt a "child-centered" distribution model, to some extent displacing the caregiving needs of elderly people (Zhong and Peng 2022). Our regression results also validate this finding. Second, the level of family income has a significantly positive effect on the living model; for a 1% increase in the logarithm of family income, the probability of living with elderly people increases by 1.8%.

Finally, there are regional differences in living with the elderly people of urban families. According to previous statistical data, the Northeast Region has the highest degree of aging, and compared to that in the Eastern Region, the probability of living with elderly people in the Northeast Region has decreased by 40.8%, while the probability of living with elderly people in the Western Region has decreased by 11.2%. As mentioned earlier, the northeastern region has a very high proportion of young people going out to work. According to the "Sixth Population Census" (2010), the total population of the northeastern region was 1,095,208,440, almost 110 million people; by the time of the "Seventh Population Census," the total population of the northeastern region was 985,149,480. In the past decade, the total population of the northeastern region has decreased by 110,058,960, a decrease of 11.17%. The main group that has decreased is the middle-aged and young labor force. With the outflow of the labor force, the northeastern region faces not only the problem of deepening the age gap but also the problem of the difficulty of elderly care.

The second dependent variable in the equation is "whether financial support is provided to non-co-residing elderly family members". Individual and family characteristics have significantly different effects on the dependent variable compared to the impact on "living together." First, in terms of the life cycle, compared to adult children born before 1970, those born between 1970 and 1980 have the highest probability of providing economic support to their parents, increasing by 47.3%. Regarding the life cycle, children in the 1970s and 1980s were facing dual caregiving pressures, with most families adopting a "child-centered" model of distribution and an alternative model of care with financial support for older parents. In terms of the impact of education level, compared to having a primary education or lower, having a junior high school education significantly affects elderly people's economic support, with a 12.7% greater probability. Both family income and family assets have a positive impact on providing economic support to elderly people; for a 1% increase in family income, the probability of providing economic support to elderly people increases by 2.8%, and for a 1% increase in family assets, the probability of providing economic support to elderly people increases by 3.6%. In terms of the regional factors affecting economic support for elderly people, the probability of providing economic support to elderly people in the Northeast Region is significantly lower than that in the Eastern Region, with a decrease of 15.9% (Table 4).

Table 4 Factors influencing family caregiving choices-"Living with the Elderly" and "Providing Economic Support", bivariate probit analysis

	(1) Living with the Elderly	(2) Providing Economic Support
Age (Reference Group: respondents born before 1970)		
Born in 1970–1980	0.091*	0.473***
	(0.053)	(0.049)
Born in 1980–1990	− 0.296***	0.072
	(0.064)	(0.056)
Born after 1990	− 0.360***	0.018
	(0.072)	(0.066)
Education background (Reference Group: respondents with a primary school education or below)		
Junior high school	− 0.087	0.127**
	(0.058)	(0.055)
High school and vocational high school	− 0.216***	0.074
	(0.064)	(0.060)
College and above	− 0.204***	0.064
	(0.070)	(0.064)
Number of children under 12 (Reference Group: respondents without children)		
One child	0.004	− 0.010
	(0.049)	(0.045)
Two or more children	− 0.148**	− 0.029
	(0.063)	(0.055)
Log family income	0.018**	0.028***
	(0.008)	(0.008)
Log family assets	0.006	0.036***
	(0.010)	(0.009)
Regional variables (Reference Group: families in east China)		
Central China	− 0.073	0.072
	(0.049)	(0.044)
Western China	− 0.112**	0.044
	(0.051)	(0.046)
Northeast China	− 0.408***	− 0.159**
	(0.087)	(0.075)
Constant	− 0.503***	− 1.292***
	(0.101)	(0.097)
Observation value	5639	
Correlation coefficient	− 0.118***	
	(0.026)	

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Substitution effect: using economic support as a substitute for living with elderly individuals

To further verify whether families have substitution effects on the decision to provide economic support and live together, we use a bivariate probit model for estimation. The correlation coefficient between the error terms of the living together and economic support equations is -0.118 (and statistically significant) in Table 4. This indicates that unobservable heterogeneity among different individuals has opposite effects on the direction

of living together and economic support, showing that there is a strong substitution between the choices of living together and providing economic support, consistent with our expected hypothesis.

The results of the baseline regression model analysis (Table 4) indicate that the impact of adult children's age on living together and economic support is the opposite. The younger the adult children are, the lower the probability of living with their parents, and conversely, the greater the probability of providing economic support to their parents. This suggests that younger adult children have a stronger substitution in the choice of the two caregiving models. When families face resource constraints in caregiving, they are more inclined to use economic support as a substitute for living together. Second, education level also showed a similar trend. As education level increases, the probability of living with parents decreases, while the probability of providing economic support to parents increases. This indicates that as individuals' education levels rise, the opportunity cost of living with parents increases, so children with higher education levels tend to adopt economic support as a way to replace living together.

From a family characteristic perspective, the level of family assets significantly affects economic support but does not significantly affect living together. This suggests that as family income and assets increase, there will be some changes in the choice of caregiving. Overall, the probability of providing economic support will significantly increase, while the probability of living together will decrease.

The impact of female employment on providing economic support and living with elderly individuals

Women are the primary caregivers in family caregiving activities, and female employment is inevitably linked to the choice of caregiving model (Chen et al. 2016; Xiong et al. 2020). Therefore, women need to strike a balance between caregiving and employment. This section focuses on the impact of female employment on the choice of caregiving model in urban families. Regarding female employment, this paper selects three core independent variables: "whether employed," "whether in flexible employment," and "logarithm of employment income."

In terms of the impact of female employment on living with elderly parents, whether a woman works does not significantly influence her living arrangement. However, the type of employment has a significant impact on the living arrangement. Women engaged in "formal employment" are 26.5% less likely to live with elderly parents than those engaged in "flexible employment." Women in flexible employment typically have more flexibility in managing their work hours and location, allowing them to better balance caregiving and work responsibilities. Additionally, female employment income negatively affects coresiding with elderly parents, with a 4.2% decrease in the likelihood of coresiding for every 1% increase in personal income.

When examining the impact of female employment on providing economic support to elderly parents, whether a woman works plays an essential determining role. Compared with nonworking women, working women are 16.6% more likely to provide economic support to elderly parents. Furthermore, female employment income has a significant positive impact on the decision to provide economic support. For a 1% increase in personal income, there is a 7.4% increase in the likelihood of providing economic support.

Table 5 The impact of female employment factors on family caregiving choices, bivariate probit analysis

	(1) Living with the Elderly	(2) Providing Economic Support
Core independent variables		
Employment (Reference Group: respondents is not employed)		
Employed	− 0.013	0.166**
	(0.071)	(0.067)
Type of employment (Reference Group: flexible employment)		
Formal employment	− 0.265***	− 0.015
	(0.090)	(0.081)
Log employment income	− 0.042*	0.074***
	(0.025)	(0.027)
Other control variables		
Education background (Reference Group: respondents with a primary school education or below)		
Junior high school	− 0.117	0.178**
	(0.084)	(0.081)
High school and vocational high school	− 0.206**	0.083
	(0.096)	(0.092)
College and above	− 0.267***	0.012
	(0.100)	(0.095)
Number of children under 12 (Reference Group: respondents without children)		
One child	− 0.005	− 0.089
	(0.069)	(0.064)
Two or more children	− 0.139	− 0.097
	(0.089)	(0.081)
Log family income	0.030**	0.055***
	(0.012)	(0.012)
Log family assets	0.003	0.022
	(0.015)	(0.014)
Regional variables (Reference Group: families in east China)		
Central China	− 0.143*	0.125*
	(0.074)	(0.068)
Western China	− 0.070	0.093
	(0.077)	(0.071)
Northeast China	− 0.351***	− 0.323***
	(0.120)	(0.106)
Constant	− 0.449*	− 2.037***
	(0.257)	(0.276)
Observation value	2423	
Correlation coefficient	− 0.107***	
	(0.038)	

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In summary, the factors "whether a woman is employed", "the type of employment" and "employment income" all have a significant impact on the choice of family caregiving model. On the one hand, employed women, in comparison to unemployed women, face

greater opportunity costs regarding caregiving, making them more inclined to use economic support as an alternative to living with elderly people. On the other hand, female employees increase their income and social status, making them better equipped to provide economic support to their parents and increasing their decision-making capacity (Table 5).

Conclusion and discussion

This paper explores the changes in urban elderly care models against the background of population aging with data from the CSS2021. The study includes three major findings. First, family elderly care, as a traditional elderly care model in China, has increasingly developed into two care models in urban society, namely, the living-with-the-elderly model and the providing-economic-support model. The two models can substitute for each other. Low-income families tend to choose the living-with-the-elderly model, while high-income families prefer the providing-economic-support model. This is related to the opportunity cost of the two groups and their concepts of the family. The employment rate of the high-income group is higher, and their opportunity cost of giving up employment is also higher. Therefore, high-income families tend to choose the providing-economic-support model to fulfill their care responsibilities. The cost of elderly care for low-income families, however, may be greater than what they earn, so the living-with-the-elderly model is preferred.

Second, urban families need to face double pressure from elderly care and child care. When there are no sufficient family care resources to cope with these two pressures, the problem of a care deficit will emerge in urban families. Families need to distribute care resources for elderly care and child care. In terms of their choices, urban families tend to prefer allocating limited resources to children. The regression results, therefore, show that the probability of living with the elderly 70 years and above in families with two or more children is significantly lower.

Third, the employment status of working-age women in urban families impact the relationship between living with elderly people and providing economic support. The substitution effect is stronger among employed women than among nonemployed women. Employed women are more inclined to use economic support to alleviate the direct caregiving pressures associated with coresidence. When examining different employment patterns among women, those in "formal employment" are less likely to live with elderly parents than are those in "flexible employment," as formal employment often involves more rigid work hours and locations, making it more challenging to balance caregiving and work responsibilities.

In the end, this paper puts forward some thoughts from the perspective of social policy. First, regardless of family ethics or limited care resources, the family is still the main body of elderly care provision. However, with the relaxation of the three-child policy, families will face double care pressure caused by raising children and taking care of elderly people in the future. Improving the family's care ability has become an urgent problem to be solved. As a result, the government should gradually improve the public resource support system, vigorously promote the construction of community service infrastructure, and expand the supply capacity of relevant services.

Second, there has been a large regional imbalance in China's economic development, resulting in the concentration of the workforce in developed areas. Northeast China is confronted with the most serious aging problem, yet the care resources in this region are insufficient. There is an enormous gap in family care and social care resources in this area. In the future, the supply of socialized elderly care services should be gradually enhanced to compensate for the shortage of elderly care resources in the family.

Abbreviations
CSS   China Social Survey
SHARE   Survey of Health, Aging and Retirement in Europe

Author contributions
Dr. Wang Jing designed the study and conduct the research.

Availability of data and materials
We based our study on data, publicly available of the China Social Survey (CSS 2021). http://css.cssn.cn/css_sy/zlysj/lnsj/202301/t20230128_5584406.html

Declarations

Competing interests
The authors declare they have no competing interests.

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