

# Family Network and Household Expenditure

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**Abstract.** Consumption has a lasting pulling power on the economy and is an important expectation on China's road to stable growth, but the problem of underconsumption has become increasingly prominent in China in recent years. Unlike social and clan networks, the unique structure of family network allows families to maintain closer ties with each other by blood and marriage. This paper examines the impact of family network and household consumption expenditure using data from the China Family Tracking Survey (CFPS) questionnaire. The study results show that close family network show a significant positive relationship with household consumption expenditure. The results of the mechanism analysis suggest that family network may contribute to more household consumption expenditure by achieving more household borrowing with access to more employment channels. Heterogeneity analyses suggest that greater household wealth, housing assets, and higher age of the head of household can significantly strengthen the contribution of family ties to household consumption expenditure.

**Keywords:** Family Network; Consumption Expenditure; Household Borrowing; Access to Employment.

## 1. Introduction

Consumption is an important driving force for economic development and one of the troikas of economic growth. However, against the backdrop of the current economic transformation and upgrading in China, the problem of residents' lack of consumption has gradually come to the fore. This is mainly due to the slow growth of residents' income, coupled with factors such as high property prices and increased expenditures on healthcare and education, which have led to the lack of residents' willingness to consume. Despite the lack of residents' consumption, its economic importance is self-evident. Firstly, residents' consumption is a key factor in promoting market demand and can lead to industrial upgrading and structural adjustment. Secondly, consumption can expand domestic demand and improve the quality and effectiveness of economic growth. In addition, consumption can raise people's living standards and promote social harmony and stability. Therefore, in order to promote residents' consumption, the government and enterprises need to take measures to raise residents' income, improve the consumption environment, and increase consumer credit and other policy support. Therefore, the importance of how to take effective initiatives to stimulate domestic residents' consumption cannot be ignored [1].

In recent years, to address the problem of insufficient household consumption in China, the literature has explored the issue from the perspectives of digital finance, medical insurance for major diseases, household indebtedness, and cohort effects, which provide important references for the government's macro-level policymaking on consumption. However, existing studies have not explored in depth another important factor affecting household consumption: family network.

In contrast to previous studies on clan networks and general social relations, this article follows Tian Zifang's study, which defines family relations as the network relations between nuclear families and their kinship families based on blood and in-laws. Existing studies have shown that close family network can enable nuclear families to obtain more resources as well as information from other kinship families, which in turn has a certain impact on residents' household consumption [2, 3]. This paper argues that close family network can enhance the ability of nuclear families to obtain information and resources, which in turn increases household consumption expenditures. In the



empirical analyses, this paper uses data from the China Family Tracking Survey (CFPS) in 2010 and 2014 to investigate the impact of "divided but not distant" and "broken bones and connected tendons" family network on residents' household consumption expenditure. The article explores the impact of "divided but not separated" and "broken bones and tendons" family network on household consumption. At the same time, the article adopts the questions "Do you participate in family activities such as ancestor worship/tomb-sweeping?" and "How often do you interact and liaise with relatives who do not live with you?" two indicators to measure family network. The empirical results show that closer family network can significantly increase household consumption. After adding the control variables of clan network, social network, family economic situation and personal characteristics, the relationship between family relationship and household consumption remains robust and significant after the robustness test. Further analyses of the mechanism of family network on household consumption suggest that family network may increase household consumption by increasing household borrowing and broadening work channels.

The main contributions of this paper are: firstly, this paper constructs family relationship measurement variables based on blood relationship and in-law relationships, explore the relationship between family network and household consumption expenditure, and improves the related research in the field of family network and household economic behavior. Second, this paper searches for the potential mechanism between family network and residents' household consumption, providing theoretical and empirical support for understanding how family network affect residents' consumption behavior, which has not been exposed in the existing literature. Based on the above findings, this paper identifies another potential way to increase household consumption expenditure, in addition to external policy stimulus, in response to the current problem of insufficient consumer demand.

The subsequent arrangement of this paper is as follows: the second part is the literature review and theoretical analysis; the third part is the data sources, descriptive statistics, model construction, and descriptive statistics; the fourth part is the empirical analyses, which contain benchmark regression, robustness tests and endogeneity issues, mechanism analysis and heterogeneity analysis; and the last part is the conclusion and policy recommendations.

## **2. Literature Review and Theoretical Analysis**

### **2.1. Literature Review**

Existing literature has explored the factors influencing householders' consumption from economic, behavioral finance and psychological perspectives. From the economic aspect, Gan (2010) Campbell (2007) examined the contribution of household real estate and financial assets to consumption growth and that the wealth effect of real estate is greater than that of financial assets [4, 5]. From a behavioral finance perspective, it was found that people tend to view issues from the perspective of gains and losses rather than wealth, which explains the asymmetry between the effects of increasing and decreasing wealth on consumption [6]. From a psychological perspective, Thaler (1980) found that individuals and households psychologically code the sources, ways of preserving and paying for wealth when making economic decisions, which has an impact on household consumption expenditures [7]. The impact on household consumption expenditures. However, there is less research in the existing literature on the important factor of family network.

The family network examined in this paper refer to the network relationships between the nuclear family and its kinship families based on blood and in-laws [8]. This network relationship with is distinct from clan networks and social networks in general. Clan network is a typical feature of traditional rural areas and is an important root of traditional vernacular social governance. A close clan network helps to increase the participation rate of households in the private financial market and increase the amount of private financing, which in turn helps to enhance consumption [9, 10]. However, the role of clan networks, which are bound by blood ties, tends to weaken with economic development and social transformation [11]. Existing studies have broader and not yet reached a

consensus on the measurement of social networks, and the literature usually uses the number of family and friends visited during the Spring Festival [12], gift expenditures, and the use of social networking tools for consideration. For individuals, social networks can increase the likelihood of borrowing, facilitate information communication, and promote job performance and job security [13, 14]. For firms, stronger social networks can provide advantages in terms of information, resources, trust and reputation, and promote international business development and innovation [15].

The first to focus on the relationship aspect of the family was the study Banfield (1958), the article states that the closeness of blood between family relatives is the basis for determining their code of behavior [16]. Thereafter, some scholars at home and abroad have conducted in-depth studies on this issue. Since then, some scholars at home and abroad have carried out in-depth research on this, such as Greif (2006a), Greif & Tabellini (2012) and so on. The paper compares family kinship between China and the West, pointing out that Western family kinship is centered on the "nuclear family" and "atomic family", while Chinese family kinship is more often expressed in the concept of the extended family, which covers the "extended family" and the "extended family". "The concept of extended family [17, 18] It is pointed out that Western family kinship is centered on "nuclear family" and "atomic family", while Chinese family kinship is more often expressed in the concept of extended family.

After the reform and opening up, due to the influence of factors such as the increasing frequency of population migration and family planning policies, family kinship has been in transition from the "extended family" to the "nuclear family". Nowadays, Chinese families are characterized by the following features: increasing miniaturization in size; a shift in the intergenerational structure of families to a predominantly generational household; and a predominantly nuclear family type [19]. The Chinese family is now characterized by the following features. Although the size of the Chinese family is becoming smaller, families do not exist in isolation from each other. Ma Guoqing (1999) believes that the Chinese family is characterized by "division with succession, succession with support, and support with integration". It is thus clear that the kinship between families cannot be ignored when studying the economic behavior of Chinese families.

## **2.2. Hypothesis Development**

### **2.2.1. Family Relations and Household Consumption Expenditure**

The view that closer family ties can promote household consumption is largely accepted. Tian Zifang (2022) argues that there is a significant and robust positive contribution of family ties to consumption, and that the contribution of family ties is more pronounced in the case of households with poorer economic status, a lack of social security, and an older head of household.

Theoretically speaking, family relations have an impact on residents' consumption through the information path, the resource supply path and the comparison path. Firstly, family relations have an information function. Close family network allows relatives to have a more in-depth understanding of each other, which can alleviate problems such as adverse selection and moral hazard, and family members can obtain more financing channels to balance cash flow and weaken liquidity constraints [2]. Second, inter-family resource flows can have both positive and negative impacts on consumption. In terms of positive impact, social capital embedded in the family network can bring economic [3], psychological and other aspects of support; in terms of negative influence, under the influence of the cultural tradition of family collectivism, family network can dilute the interests of the nuclear family in order to give more economic support to other kinship families [20]. Finally, the nuclear family, through the comparison effect as well as the demonstration effect, uses the kinship family with a higher level of consumption as a reference and thus increases its own household consumption.

After verifying that family network can increase residents' consumption, the specific ways in which family network may affect consumption are further explored.

Accordingly, Hypothesis 1 is formulated in this paper:

$H_1$ : Other things being equal, closer family ties have a positive contribution to household consumption expenditure.

### **2.2.2. Family Relations and Family Lending**

Close family ties can facilitate inter-household lending and borrowing, and Kinnan & Townsend (2012) examined the impact of kinship networks on household investment behavior at the micro level [21]. The study suggests that "having relatives in the village" provides households with an implicit guarantee of risk, making it easier and more accessible to finance and cash flow. For households in the country, the closer the family ties, the easier it is for members to access loans through kinship networks to meet their financial needs.

The existing literature has confirmed the positive relationship between borrowing from households and household consumption expenditure, which can be analyzed in terms of both the wealth effect and the wealth illusion effect [22]. The wealth effect refers to changes in consumption expenditure due to changes in real household wealth [23], in the case where household liabilities can be repaid with expected future income, household liabilities are also part of household wealth. At this point there is a wealth effect of indebtedness that can increase household consumption [24]. The wealth illusion effect refers to the fact that the perception of residential households of their own wealth will be higher than the actual wealth they possess, generating a virtual wealth effect, which will in turn enhance household consumption expenditure [25].

Accordingly, Hypothesis 2 is formulated in this paper:

$H_2$ : Other things being equal, closer family ties can facilitate the incidence of household borrowing, which in turn increases household consumption expenditures.

### **2.2.3. Family Relations and Access to Employment**

Close family ties can facilitate the employment of nuclear family members by obtaining employment-related information from other kinship families. Li Peilin (1996) found that most migrant workers found their first jobs through their hometowns or relatives, accounting for 44.0 per cent, and 31.0 per cent through their hometowns' or relatives' initiative, which together accounted for 75 per cent of the total [3]. The strong ties represented by the family kinship network enhance the transmission of information in the labor market and make it easier for jobseekers to find work through that network.

Existing studies show that there is a positive relationship between residential employment and household consumption expenditure. Qian Long and Hong Mingyong (2016) argue that non-agricultural employment is more durable and stable compared to agricultural employment because it is not affected by seasonal and natural conditions. Therefore, non-agricultural employment can promote a lasting increase in residents' income, which extends the boundaries of household budget constraints and thus increases the level of rural household consumption [26]. Employment can generate wages, bonuses, and profits. Employment generates monetary rewards, such as wages, bonuses and profits, which increase the accumulation of wealth in households, thereby increasing their purchasing power and enabling them to buy more goods and services, thereby increasing consumption.

Accordingly, Hypothesis 3 is formulated in this paper:

$H_3$ : Other things being equal, closer family ties can broaden employment channels, which in turn boosts household consumption expenditures.

## **3. Data Selection and Variable Construction**

### **3.1. Sample Data Profile**

The data used in this paper come from the China Family Tracking Survey (CFPS) conducted by the China Social Science Research Centre of Peking University. In terms of data coverage, the database

covers 28 provinces/municipalities/autonomous regions in mainland China, except Xinjiang, Tibet and Qinghai, and adopts a multi-stage, stratified random sampling method to make the sample more representative; in terms of data coverage depth, the database tracks and collects data at three levels: individual, household and community, so as to comprehensively understand the socio-economic conditions, family network, education, employment, health and other aspects of Chinese families and individuals, education, employment, health and so on.

Since the CFPS database has, in recent years, had no questions in the questionnaire corresponding to the explanatory variable of family network as defined in this paper, this paper uses some of the data in this database from 2010 and 2014. The reason for using 2010 data is that the control variables involved in the empirical analyses, such as clan networks, social networks and values, were not considered in 2014, so this paper matches the 2010 adult and family data based on the family codes on the basis of using 2014 data.

This paper examines the impact of family network on the consumption of household residents. Considering that family network is located in the 2014 Household Economy Pool, in order to maintain the unity of the study population and the accuracy of the data, the dependent variable is measured using consumption data at the household level. When merging the adult and household economic pools, this paper uses the member most familiar with household finances as the basis for the determination of the head of household to represent the economic behaviour of the entire household. After matching the 2010 and 2014 databases based on household codes and excluding samples such as missing values, the paper obtains a total sample of 11,797 family households.

## **3.2. Description of Variables**

### **3.2.1. Explanatory Variables**

The explanatory variable of this paper is to measure the closeness of the family relationship between the nuclear family and the kinship family, which is "separate but not distant". A dummy variable, *fnw1*, was constructed based on the response to the questionnaire, "Do you participate in family ancestor/sweeping activities?" A dummy variable *fnw1* was constructed based on the responses to the questionnaire "Do you participate in family ancestor/sweeping the graves?", which was assigned a value of 1 if the respondent answered "yes" and 2 if the respondent answered "no". The dummy variable *fnw2* was constructed from the responses to the question "How often do you socialize and communicate with relatives who do not live with you?" Respondents who answered "not often" or "not at all" were assigned a value of "0" and "1" for "often socialize" or "occasionally socialize". In addition, a summed value of *connect* was constructed to measure the frequency of interactions between nuclear and kinship families, with larger values indicating more frequent interactions and closer family ties.

### **3.2.2. Explained Variables**

Referring to Zhang Dayong's (2012) measure, the explanatory variable is household consumption expenditure, which is obtained by summing and taking the logarithm of food, clothing, travelling, communication, culture, recreation and leisure, housing, health insurance, education, daily expenditure, and other expenditures and is denoted as *expense*.

### **3.2.3. Control Variables**

The control variables mainly include the economic status of the family, the personal characteristics of the head of the household, the clan network and the social network and other factors that may affect the consumption of the residents' family, the construction of the specific indicators and the data processing are as follows.

The economic status of the household includes household income, financial assets, housing assets, non-housing physical assets, and total liabilities. The personal characteristics of the head of household include sex, place of registration, marital status, education, religion, and occupational status. At the

same time, this paper draws on Li Tao and Zhang Wentao's (2015) use of the "Big Five" personality trait variable to describe the personal characteristics of the respondents, which is recorded as conscientiousness (*con*), extraversion (*ext*), agreeableness (*agr*), openness to experience (*ote*) and neuroticism (*neu*) [27].

The family network of interest in this paper are different from clan networks and general social networks and are the most central and stable part of the social relationship network based on blood relatives and in-laws, which has a direct impact on household consumption. Clan networks were measured using the CFPS (2012) questionnaire's "family has a genealogy or family tree" question. *zupu*: If the respondents answered that they have genealogy, the answer will be marked as "1", otherwise it will be marked as "0". Social network was measured using the question "Number of visits from family and friends during Chinese New Year". *socialnet*: The social network was measured using the question "Number of visits from family and friends during Chinese New Year".

### 3.3. Descriptive Statistics and Correlation Analysis

#### 3.3.1. Descriptive Statistics

**Table 1.** Descriptive statistics

Name	Obs	Mean	Std	Min	Max
expense	11,791	9.497	1.219	2.565	14.800
connect	11,797	1.443	0.647	0.000	2.000
fnw1	11,797	0.603	0.489	0.000	1.000
fnw2	11,797	0.840	0.367	0.000	1.000
zupu	11,044	0.231	0.421	0.000	1.000
social	11,044	5.760	6.735	0.000	100.000
income	11,629	10.410	1.323	0.693	15.650
ass_risk	11,797	5.513	5.242	0.000	15.890
ass_phy	11,797	8.752	1.734	0.000	14.110
ass_house	11,637	10.230	4.221	0.000	16.649
debt	11,797	3.257	4.934	0.000	15.202
gender	11,797	0.523	0.500	0.000	1.000
register	11,797	0.294	0.455	0.000	1.000
married	11,797	0.856	0.351	0.000	1.000
education	11,797	6.539	4.933	0.000	19.000
religion	11,797	0.306	0.461	0.000	1.000
system	11,797	0.024	0.154	0.000	1.000
manager	11,797	0.036	0.186	0.000	1.000
family	11,797	3.781	1.825	1.000	17.000
con	11,797	3.050	0.524	1.000	5.000
ext	11,797	4.013	0.655	1.000	5.000
agr	11,797	3.126	0.528	1.000	5.000
ote	11,797	2.994	0.746	1.000	5.000
neu	11,797	1.744	0.929	1.000	5.000

Table 1 gives descriptive statistics for the household sample. The descriptive statistics of the data used in this paper are not significantly different from those of Li Tao and Zhang Wentao (2015) and Song Ze (2021). This paper follows similar data processing and analysis methods, and the variables are defined and measured in a consistent manner to ensure comparable results.

## 4. Empirical Analysis

### 4.1. Main Return

In order to investigate the relationship between family network and household consumption of residents, the following equation is constructed:

$$Lnexpense_{ij} = \alpha_0 + \beta_0 fnw_{ij} + \beta_1 X_{ij} + \delta_j + \gamma_m + \mu_n + \varepsilon_{ij} \quad (1)$$

Where  $Y_{ij}$  denotes  $j$  provincial household  $i$ 's consumption expenditure, and the dependent variable family relationship  $fnw_{ij}$  denotes the degree of closeness of the nuclear family to its relatives' families, including three aspects, participation in family rituals  $fnw1$ , the frequency of interaction with relatives  $fnw2$  and the sum of the two  $connect$ .  $X_{ij}$  denotes other factors affecting consumption expenditures of resident households, including economic characteristics of the household, personal characteristics of the head of the household, clan networks, and social networks.  $\delta_j$  denotes province fixed effects.  $\gamma_m$  denotes city fixed effects, and  $\mu_n$  denotes village fixed effects, and  $\varepsilon_{ij}$  is the random error term. If hypothesis 1 holds, then  $\beta_0$  will show significantly positive.

**Table 2.** Main regression

	(1)	(2)	(3)	(4)	(5)	(6)
	expense	expense	expense	expense	expense	expense
fnw1	0.263*** (0.026)			0.070*** (0.023)		
fnw2		0.488*** (0.033)			0.174*** (0.030)	
connect			0.316*** (0.019)			0.102*** (0.017)
clannetwork	No	No	No	Yes	Yes	Yes
socialnetwork	No	No	No	Yes	Yes	Yes
economicvariable	No	No	No	Yes	Yes	Yes
personalvariable	No	No	No	Yes	Yes	Yes
othervariables	No	No	No	Yes	Yes	Yes
constant	9.306*** (0.020)	9.058*** (0.030)	9.011*** (0.031)	4.621*** (0.150)	4.584*** (0.150)	4.607*** (0.150)
N	10,428	10,428	10,428	10,428	10,428	10,428
R <sup>2</sup>	0.216	0.227	0.230	0.448	0.449	0.449
Province	Yes	Yes	Yes	Yes	Yes	Yes
County	Yes	Yes	Yes	Yes	Yes	Yes
Village	Yes	Yes	Yes	Yes	Yes	Yes

Note: (1) Robust standard errors in parentheses. \*p<0.1, \*\*p<0.05, \*\*\*p<0.01 (2) Coefficients on control variables are not reported due to space constraints

The empirical results are shown in Table 3, where columns (1), (2), and (3) indicate that close family ties are significantly and positively associated with residents' consumption, and that this result holds after accounting for fixed effects at the province, city, and village level. Further, the effects of clan networks, social networks, and personal characteristics of household heads are considered. With the inclusion of control variables, family ties are still significantly and positively related to residential consumption. The results in column (6) of Table 3 show that each unit increase in the closeness of nuclear and kinship family ties increases household consumption by 10.2 percent.

## **4.2. Robustness Tests and Endogeneity**

### **4.2.1. Robustness Test**

#### **(1) Impact on different types of consumer goods**

Drawing on Zhang Dayong's (2012) study of household consumption, this paper categorizes consumption into durable goods consumption and nondurable goods consumption. Among them, non-durable consumption specifically includes food, daily necessities, clothing, leisure and entertainment expenditures, and education expenditures other than study abroad. From the regression results, consistent with the main regression, close family ties have a significant contribution to all types of household consumption, with a 13.9% increase in household consumption for every unit increase in the closeness of ties between nuclear and kinship families. This may be because nuclear families obtain more resources and information from other kinship families, which increases the disposable income of the family and thus promotes consumption; at the same time, close family ties may also push up the consumption of nuclear families through the comparison effect as well as the demonstration effect.

#### **(2) Addition of control variables**

The four variables of permanent income, risk attitudes, the share of children and elderly in the household, and the importance of the Internet as an information channel are added to the original control variables to test the robustness of the promotion of consumption by family network.

According to Friedman's permanent income hypothesis, consumers would classify income into temporary and permanent income and consider permanent income as a determining factor affecting consumption. Zhong Hui (2015) argues that attitude towards risk affects the level of household consumption, and the higher the level of risk aversion, the lower the level of consumption will follow. The percentage of children and elderly population, on the other hand, affects the difference in the level of household spending on education, healthcare and insurance. With the development of the Internet, the interaction and communication between nuclear and kinship families are not affected by physical distance, and the transfer of resources and information can be carried out through the Internet.

Table 5 shows that the main regression in this paper still holds after adding permanent income, household risk attitudes, the share of children and elderly population and the importance of the Internet as an information delivery as control variables.

#### **(3) Measurement of explanatory variables**

From the perspective of social capital, nuclear families may pay a certain cost to maintain close family ties by, for example, giving gifts to relatives' families in order to obtain more information and resources. From the perspective of family collectivism, the nuclear family will provide financial and living assistance to improve the situation of the relative family. Therefore, close family ties may increase spending on favors as well as on financial help given to relatives. In order to capture the effect of purer family ties on consumption expenditures, expenditures on favors and financial help to relatives are removed from total consumption to obtain adjusted consumption expense 2. The regression analysis was conducted again and found that the contributory effect of family ties on residents' household consumption remained significant, with adjusted household consumption increasing by an average of 7.2 percent for each unit increase in the closeness of family ties.

### 4.2.2. Endogenous Problems

Robustness tests address the endogeneity problem associated with omitted variables, but there may still be a reverse causality endogeneity problem. The more households consume, the more nuclear households may spend to maintain or strengthen relationships with kinship households, and the greater the range and intensity of family ties may be. Therefore, this paper re-estimates the model using two-stage least squares with instrumental variables. According to Talhelm (2014), compared to wheat cultivation, rice cultivation requires cooperation among all farmers in the cultivation area, which creates a strong network of relationships among farmers, and residents of rice-growing areas are more holistic in their thinking, with a higher degree of dependence on each other and loyalty to friends [28]. In this paper, we draw on Pan Jianping (2019) who selects as an instrumental variable the per capita rice sown area of each province in 1978, which is measured by dividing the rice sown area of each province by the number of rural populations [29].

The reasons for choosing the per capita area of rice sown in each province in 1978 are as follows: first, in 1978, China was at the beginning stage of reform and opening up, the urbanization rate was low, the population was mainly located in rural areas, and the way most people depended on for their livelihood was agriculture. The type of crop cultivated and the area sown per capita are a reflection of the willingness of people to cooperate and the communication and interaction between families. Therefore, the sown area of rice per capita is highly correlated with the explanatory variable of family relations, which is in line with the choice of instrumental variables. Secondly, there is no significant relationship between rice sown area per capita and household consumption in 1978, so this variable satisfies the exogeneity of the instrumental variable.

**Table 3.** Endogeneity issues: instrumental variables

	connect	expense
	First Stage (1)	Second Stage (2)
connect		0.159*** (0.031)
Rice cultivation per capita	4.186*** (0.787)	
control variables	Yes	Yes
County	Yes	Yes
Village	Yes	Yes
constant term	-1.317** (0.512)	6.241*** (0.057)
N	10,812	10,812
Adjusted R <sup>2</sup>	0.205	0.057
F-value	2.45 (0.000)	
Durbin chi2(1)	1.034 (0.309)	
Wu-Hausman	1.033 (0.340)	

Note: (1) Robust standard errors in parentheses. \*p<0.1, \*\*p<0.05, \*\*\*p<0.01 (2) The control variables are consistent with the main regression. Coefficients on control variables are not reported due to space constraints.

The two-stage model is set up as follows:

$$Connect_{ij} = \alpha_0 + \beta_0 rice\_planting + \beta_1 X_{ij} + \delta_j + \gamma_m + \mu_n + \varepsilon_{ij} \quad (2)$$

$$Lnexpense_{ij} = \alpha_0 + \beta_0 \widehat{Connect}_{ij} + \beta_1 X_{ij} + \delta_j + \gamma_m + \mu_n + \varepsilon_{ij} \quad (3)$$

In this paper, we only control for city as well as village level fixed effects in the endogeneity problem, and we do not control for province fixed effects. This is because the per capita area of rice cultivation in each province was selected as an instrumental variable in solving the endogeneity problem. This is equivalent to assigning the same value to each province, which has the same effect as controlling the province fixed effects, so only the fixed effects of cities and village settlements are controlled when performing the two-stage least squares method.

The first stage regression results show that the per capita rice cultivation area is positively correlated with family relationship at 1% significance level, but the model F<10 is only 2.45, which has the problem of weak instrumental variables. Durbin statistic and Wu-Hausman statistic do not reject the "instrumental variables are exogenous explanatory variables" hypothesis, so the instrumental variables elected in this paper have good exogeneity. The second-stage regression results show that family relationship is positively correlated with household consumption expenditure at the 1% significance level, so the problem of weak instrumental variables mentioned above is not serious. The results of the baseline regression show that after the endogeneity problem is alleviated, there is still a significant positive effect of family ties and household consumption. The result is that for every unit increase in the closeness of family network, household consumption increases by an average of 15.9%. Comparison with the results of the main regression shows that there is an underestimation of the main regression.

### 4.3. Mechanism Analysis

Based on the foundation that family network has a facilitating effect on residents' household consumption, it further explores how family network promote household consumption. Based on the theoretical analysis in the previous section, this paper argues that family network may promote the household's consumption by increasing the household's borrowing and broadening the work channel. From the perspective of the borrowing pathway, close family network can make the nuclear family choose the family of relatives as their borrowing target to fulfill their financial needs and promote the consumption of the nuclear family when they have borrowing needs. From the perspective of the work pathway, based on close family ties, kinship families can provide more information on the labor market, making it easier for nuclear family members to find employment, increasing the accumulation of family wealth and increasing their consumption capacity.

Analyzing the relevant variables according to the 2014 CFPS question construction mechanism measures how household relationships affect consumption expenditure through the household borrowing and work channels. Household borrowing is measured by "first borrower", which is denoted as *first*. This variable is assigned a value of "1" if the respondent's first borrower is "parent or child" and "0" otherwise. The job channel variable is constructed for the answer to the questionnaire "Which of the following job search channels have you tried to get this job?*work*". The variable of job channel was constructed for the response of "which of the following channels have been tried to get this job" in the questionnaire, which was labeled as "1" if the respondent answered relatives, and "0" otherwise. In all samples, 59.4% of the first borrowers were parents or children, and 7.8% of the respondents were introduced to the job by relatives.

#### 4.3.1. Family Borrowing

Since the explanatory variable household borrowing is qualitative at this point, a binary *logit* regression. To explore the mechanism of household borrowing, the following equation is constructed:

$$\text{logit}(Loan) = \ln\left(\frac{1-P_{Loan}}{P_{Loan}}\right) = \alpha + \beta_0 fnw_{ij} + \beta_1 X_{ij} + \delta_j + \gamma_m + \mu_n + \varepsilon_{ij} \quad (4)$$

In the above equation  $\ln\left(\frac{1-P_{Loan}}{P_{Loan}}\right)$  indicates whether there is a loan with "parent or child" as the first borrower, with "1" for occurrence and "0" for non-occurrence.

Columns (2) and (3) of Table 8 show that family relationship shows a significant positive relationship with household borrowing. The results of columns (5) and (6) show that the relationship still holds after the introduction of control variables. Based on the constructed composite indicator of family network, closer family network shows a significant correlation with more frequent occurrence of family borrowing. On the basis that the main regression holds, it can be concluded that family network can increase the feasibility of residents' borrowing, which in turn increases consumption expenditures, verifying Hypothesis 2.

This suggests that while different families trust each other, share information, and provide mutual help and support, they also form a monitoring mechanism that broadly narrows information asymmetry and broadens private lending channels. Close family ties have a contributing effect on the occurrence of subsequent household borrowing, while frequent borrowing is conducive to promoting the wealth effect of the household, thus deriving subsequent household consumption expenditures.

**Table 4.** Mechanism analysis: household borrowing

	(1)	(2)	(3)	(4)	(5)	(6)
	Loan	Loan	Loan	Loan	Loan	Loan
fnw1	0.020			0.073		
	(0.046)			(0.048)		
fnw2		0.526***			0.530***	
		(0.057)			(0.060)	
connect			0.191***			0.227***
			(0.033)			(0.036)
Control variables	NO	NO	NO	Yes	Yes	Yes
Constant term	-1.104	-1.624	-1.339	-0.969	-1.148	-0.932
	(1.156)	(1.156)	(1.172)	(1.188)	(1.184)	(1.182)
N	10,428	10,428	10,428	10,428	10,428	10,428
Pseudo R <sup>2</sup>	0.06	0.06	0.06	0.08	0.08	0.08
Province	Yes	Yes	Yes	Yes	Yes	Yes
County	Yes	Yes	Yes	Yes	Yes	Yes
Village	Yes	Yes	Yes	Yes	Yes	Yes

Note: (1) Robust standard errors in parentheses. \*p<0.1, \*\*p<0.05, \*\*\*p<0.01 (2) The control variables are consistent with the main regression. Coefficients on control variables are not reported due to space constraints. (3) Fixed effects consistent with main regression.

#### 4.3.2. Channels of Employment

Since the dependent variable channel of employment is qualitative at this point, it should also be used in a binary *logit* regression. In order to explore the mechanism of the employment channel, the following equation is constructed:

$$\text{logit}(\text{Employment}) = \ln\left(\frac{1-P_{\text{Employment}}}{P_{\text{Employment}}}\right) = \alpha + \beta_0 \text{fnw}_{ij} + \beta_1 X_{ij} + \delta_j + \gamma_m + \mu_n + \varepsilon_{ij} \quad (5)$$

In the above equation  $\ln\left(\frac{1-P_{\text{Employment}}}{P_{\text{Employment}}}\right)$  denotes whether the job was introduced by relatives or not, "1" if introduced by relatives, and "0" if introduced by relatives.

The first three columns of Table 9 indicate that family ties exhibit a significant positive relationship with employment channels. After the introduction of control variables, the relationship still holds to be able to reduce job seekers' uncertainty and cost in searching for a job, thus helping them to integrate into the labor market more quickly. Moreover, relatives have a more in-depth understanding of job seekers' strengths and characteristics, which can help core family members find more compatible positions. All in all, the strong relationship represented by the family kinship network can enhance the transmission of information in the labor market, make it easier for job seekers to find a job, increase wealth accumulation, and promote the consumption of the nuclear family, which verifies Hypothesis 3.

**Table 5.** Mechanism analysis: channels of employment

	(1)	(2)	(3)	(4)	(5)	(6)
	Employ	Employ	Employ	Employ	Employ	Employ
fnw1	0.219** (0.086)			0.065 (0.090)		
fnw2		0.426*** (0.121)			0.257** (0.124)	
connect			0.259*** (0.064)			0.121* (0.068)
Control variables	NO	NO	NO	Yes	Yes	Yes
Constant term	-0.055 (1.031)	-0.426 (1.007)	-0.323 (1.039)	-3.344** (1.309)	-3.472*** (1.290)	-3.350** (1.313)
N	10,105	10,105	10,105	10,105	10,105	10,105
Pseudo R <sup>2</sup>	0.08	0.08	0.08	0.11	0.11	0.11
Province	Yes	Yes	Yes	Yes	Yes	Yes
County	Yes	Yes	Yes	Yes	Yes	Yes
Village	Yes	Yes	Yes	Yes	Yes	Yes

Note: (1) Robust standard errors in parentheses. \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$  (2) The control variables are consistent with the main regression. Coefficients on control variables are not reported due to space constraints. (3) Fixed effects consistent with main regression.

#### 4.4. Heterogeneity Analysis

The role of family network in household consumption may vary across household wealth, housing assets and age of the head of household. The reasons for this are as follows: in terms of household wealth, when the nuclear family is richer relative to the relative family, the nuclear family will give more financial and living assistance to the relative; in terms of housing assets, when the nuclear family has higher home equity relative to the relative, it may provide loans to the relative, enabling the relative family to have sufficient funds to purchase a home; in terms of older heads of household, the relative family's help can enable older household heads to improve their access to resources and information. Thus, having more household wealth, higher property values, and an older head of household enhances the consumption-enhancing effects of family ties.

##### 4.4.1. Family Wealth

Existing studies have mainly used asset class variables to measure household wealth, the asset class variables involved include owner-occupied housing assets, financial assets, and other physical assets (business assets, collectibles at home, and other valuable assets). In the CFPS database, financial assets consist of the total value of cash and deposits, government bonds, stocks, funds, financial derivatives, money owed to one's household by others, and other financial products. Since studies by

Fang Kuangnan (2013) and Bai Chongen (2012) have confirmed the existence of the impact of pensions, health insurance, and medical expenditures on residents' consumption. Therefore, this paper examines social security assets separately.

This paper will first consider the wealth owned by the nuclear family, including ongoing income, owned housing assets, financial assets and other physical assets, and then analyze the different types of wealth. Denote the total household wealth as *wealth* and construct the cross-multiplier term with family relationship respectively, denoted as the cross-multiplier term with ancestor worship activities  $fnw1 * wealth$ , the frequency of interaction with relatives  $fnw2 * wealth$  and the sum of household relationships  $connect * wealth$ . To facilitate the interpretation of the coefficients, the interaction terms are decentered and the equations are constructed as follows:

$$Lnexpense_{ij} = \alpha + \gamma_1 fnw_{ij} + \gamma_2 W_{wealth} + \gamma_3 (fnw_{ij} - \overline{fnw_{ij}})(W_{wealth} - \overline{W_{wealth}}) + \beta X_{ij} + \delta_j + \gamma_m + \mu_n + \varepsilon_{ij} \quad (6)$$

**Table 6.** Impact of Family Network on Household Consumption under Different Household Wealth

	(1)	(2)	(3)
	Expense	Expense	Expense
fnw1	0.119*** (0.024)		
fnw2		0.243*** (0.031)	
connect			0.152*** (0.018)
wealth	0.356*** (0.017)	0.347*** (0.017)	0.348*** (0.017)
c_fnw1*wealth	0.058** (0.027)		
c_fnw2*wealth		0.029 (0.033)	
c_connect*wealth			0.032* (0.019)
Control variables	Yes	Yes	Yes
Constant	7.438*** (0.130)	7.475*** (0.130)	7.502*** (0.130)
N	9,628	9,628	9,628
R <sup>2</sup>	0.386	0.388	0.389
Province	Yes	Yes	Yes
County	Yes	Yes	Yes
Village	Yes	Yes	Yes

Note: (1) Robust standard errors in parentheses. \*p<0.1, \*\*p<0.05, \*\*\*p<0.01 (2) The control variables are consistent with the main regression. Coefficients on control variables are not reported due to space constraints. (3) Fixed effects consistent with main regression.

In the above equation, the  $Y_{ij}$  denotes  $j$  provincial household  $i$ 's consumption expenditure, and  $W_{wealth}$  denotes the total wealth owned by the household. From the table below, for households with higher wealth, close family ties have an enhanced contribution to their household consumption.

#### 4.4.2. Housing Assets

Second, this will examine separately whether the role of family network on residential consumption is differentiated under different types of wealth. The same analytical method as for total wealth is used to construct the cross-multiplier term and decentralize it. The results of the cross-multiplier term are not significant when the wealth types are income, financial assets, and different social security assets. However, when the nuclear family has higher housing assets, the role of family ties in promoting household consumption is enhanced. The model construction method refers to the previous heterogeneity analysis model construction method.

**Table 7.** Impact of Family Network on Household Consumption Under Different Housing Assets

	(1)	(2)	(3)
	Expense	Expense	Expense
fnw1	0.119*** (0.024)		
fnw2		0.314*** (0.031)	
connect			0.176*** (0.018)
house	0.014*** (0.003)	0.014*** (0.003)	0.013*** (0.003)
c_fnw1*house	0.030*** (0.006)		
c_fnw2*house		-0.008 (0.008)	
c_connect*house			0.014*** (0.004)
Control variables	Yes	Yes	Yes
Constant	6.787*** (0.124)	6.927*** (0.123)	6.917*** (0.124)
N	10,284	10,284	10,284
R <sup>2</sup>	0.374	0.378	0.378
Province	Yes	Yes	Yes
County	Yes	Yes	Yes
Village	Yes	Yes	Yes

Note: (1) Robust standard errors in parentheses. \*p<0.1, \*\*p<0.05, \*\*\*p<0.01 (2) The control variables are consistent with the main regression. Coefficients on control variables are not reported due to space constraints. (3) Fixed effects consistent with main regression.

The result can be explained by the fact that when the nuclear family has higher home equity, under the influence of family collectivism, the nuclear family is more capable of supporting other kinship

families and is willing to give back their resources to the family members in order to achieve the goal of shared family prosperity.

#### 4.4.3. Age of Head of Household

A dummy variable age is constructed for the group of older household heads based on whether the head of household is 60 years old or older, with age greater than or equal to 60 years old being recorded as 1 and vice versa as 0. Table 12 introduces the interaction terms  $fnw1 * age$ ,  $fnw2 * age$ , and  $connect * age$  for households with older heads based on the main regressions. Table 12 suggests that for older heads of household, the effect of close family network contribute more to nuclear family consumption.

This result can be explained by the fact that older household heads have less access to resources and information and are less likely to make upward social comparisons relative to younger household heads. Communicating and interacting with relatives and gaining access to help older heads of household to obtain more resources and information.

**Table 8.** Impact of Family Network on Household Consumption at Different Ages

	(1)	(2)	(3)
	expense	expense	expense
fnw1	0.127*** (0.024)		
fnw2		0.277*** (0.032)	
connect			0.167*** (0.018)
age	-0.359*** (0.026)	-0.343*** (0.026)	-0.342*** (0.026)
c_fnw1*age	0.107** (0.048)		
c_fnw2*age		0.001 (0.061)	
c_connect*age			0.057* (0.034)
Control variables	Yes	Yes	Yes
Constant	6.903*** (0.124)	6.947*** (0.124)	6.988*** (0.124)
N	10,428	10,428	10,428
R <sup>2</sup>	0.364	0.368	0.368
Province	Yes	Yes	Yes
County	Yes	Yes	Yes
Village	Yes	Yes	Yes

Note: (1) Robust standard errors in parentheses. \*p<0.1, \*\*p<0.05, \*\*\*p<0.01 (2) The control variables are consistent with the main regression. Coefficients on control variables are not reported due to space constraints. (3) Fixed effects consistent with main regression.

## 5. Conclusion

With the acceleration of modernization, the structure of the Chinese family has changed from the extended family to the nuclear family, but there still exists a family relationship between the nuclear family and the kinship family that is "separate but not distant" and "broken bones are connected to tendons", and this relationship influences the consumption behaviors of the nuclear family with the ties of blood and in-laws. This relationship influences the consumption behavior of nuclear families through the ties of blood and in-laws. This paper uses data from the 2012 and 2014 China Family Tracking Survey (CFPS) to conduct an empirical analysis, and after controlling for clan networks, social networks, household economic variables, and personal characteristics, it is concluded that for every one-unit increase in ties between nuclear families and kinship families, household consumption increases by 10.2%.

Based on the main regression, this paper explores the mechanisms by which family ties affect residents' consumption. Strong family ties contribute to household consumption by facilitating nuclear family borrowing as well as broadening work channels. Further, it explores the different manifestations of the impact of family ties on household consumption expenditure due to the circumstances of household wealth, housing assets, and age of the head of household. The results of the heterogeneity analysis show that more household wealth, higher housing assets, and higher age of the head of household significantly increase the contribution of family ties to household consumption expenditure.

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