Legal Status, Gendered Preferences, and Intra-household Allocations: Evidence from a Restrictive Household Registration System

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Abstract

This paper studies how legal statuses and gendered preferences impact intra-household allocations, focusing on China's household registration system known as *hukou*. The *hukou* system determines access to public services and reflects the strength of local social networks. A person's *hukou* status can often be changed through marriage. This unique context allows us to explore how external policies and societal factors influence household decisions. Using a collective model and data on household consumption and spouses' *hukou* statuses, we find that *hukou* status plays a crucial role in determining within-family bargaining power. Wives with more advantageous *hukou* statuses, sometimes transferable to their husbands, wield significantly greater bargaining power compared to others but still less than their husbands. We identify substantial differences in preferences between husbands and wives, especially regarding goods associated with gender roles, such as alcohol, tobacco, and clothing.

Key words

Intra-household Allocations, Bargaining Power, *Hukou*, Gender Inequality

JEL Classification codes

J12, D13, J18, J16

Introduction

Research on how social statuses influence within-household bargaining faces the challenge of lacking nationwide government policies that directly impact social status and household dynamics. *Jus sanguinis* policies, which determine a person's social status at birth, extend their influence through family formation, enabling the possible exchange of social status. The *hukou* (household registration) policy in China is a notable example, as inherited status under this system affects access to social services and employment opportunities. By examining the differences in status, primarily at marriage, between husbands and wives within this system, we demonstrate that differential access to resources affects bargaining power within a couple. Holding income constant, households spend more on goods valued by the wife when her registration status is or was more advantageous than her husband's at marriage. Using a structural model, we estimate that the wife's bargaining weight increases by 0.07 if she provides the household's local-urban *hukou*, the most desirable status. Thus, we show that status under this migration policy, though not intended to affect the division of power within a household, serves as a marker for and, plausibly, a determinant of the division of consumption within the household.

The *hukou* system was designed to restrict migration within China. Thus, an individual can have *agricultural* or *non-agricultural hukou*, commonly called *rural* and *urban*. Furthermore, *hukou* is tied to a locality. Thus, a city's residents may have local urban, local rural, non-local urban, or non-local rural *hukou*. Residents with local *hukou* have access to benefits such as health care, education, government jobs, and unemployment insurance that are largely unavailable to those without local *hukou*. In addition, residents with local-urban *hukou* enjoy better resources than people with local rural *hukou* because the most favorable resources are located in urban areas (Song, 2014). Thus, individuals with local-urban *hukou* face a more favorable labor market, can enter better schools, and may be more attractive in the marriage market (Afridi et al., 2015). People with urban *hukou* benefit more from education reforms, fostering improved gender equality (Du et al., 2021). In addition, local-urban *hukou* signals that the individual has strong social ties in the local community. Such mutually beneficial connections, known as *guanxi*, play a crucial part in job finding and conducting business (Zhang, 2010). Empirical

evidence suggests that various social networks can improve women's involvement in household decision-making (Kandpal & Baylis, 2019).

Children born before 1998 received their mother's *hukou*. Since then, they may receive their father's *hukou* instead if the parents so choose (Hu, 2024). Individuals can change their *hukou* status under some conditions, most notably through marriage, and changing status has become easier in the last several years. We use data from 2002-2006, predating the liberalization of *hukou* regulations. This period is before the 2014 National New-Type Urbanization Plan, which expanded social benefits to rural *hukou* holders. Additionally, most couples in our sample married before a child could inherit its father's *hukou* status. Thus, our sample falls within the restrictive era, offering more discernible effects of *hukou* status. While this paper does not attempt to address the impact of evolving *hukou* policies, it remains an important topic for future research.

Hukou status might affect bargaining power through the initial marriage 'contract' or its ongoing association with access to benefits. If only one spouse, say the wife, has local-urban *hukou* before the marriage, she brings a valuable asset to the couple. This initial contribution to the marriage might influence future bargaining even if the husband acquires local-urban *hukou* through the marriage. If he cannot obtain local-urban *hukou*, she will continue to have greater access to resources. Moreover, in either case, she will likely have more valuable social connections or *guanxi*. Meanwhile, existing evidence suggests that women in China traditionally possess limited bargaining power, a reality reflected in household spending patterns, child-rearing practices, and the profound influence of social norms on their status within the household (Li & Wu, 2011). Thus, we anticipate that pivotal factors such as *hukou* will be both a determinant of and an indicator of factors affecting bargaining power within the family.

The pervasive *hukou* policy offers a valuable empirical test of the theory by Chiappori (1988, 1992) on how external policies function as distribution factors in Pareto weights. We begin our analysis by presenting empirical evidence illustrating how the *hukou* system operates as an additional determinant, beyond conventional factors like income, education, or wealth transfer highlighted in studies such as Doepke & Tertilt (2011), to shape a more family-centric spending

pattern. First, we show that that the wife's social insurance expenditure, a measure of the resources she brings to the household, is higher when she has the better *hukou*. We then show that if she has better *hukou*, the household spends more on clothing, education and entertainment (unfortunately not separated in the data), and, perhaps, home improvement, and less on alcohol and tobacco, consistent with her having more influence over the allocation of consumption.

We then develop a version of the collective model of the household (e.g., Chiappori (1992); Lise & Seitz (2011)) in which bargaining power depends on the husband's and wife's *hukou* statuses and who brought the more desirable *hukou* type to the family. Bargaining power in the household is represented by the Pareto weight, which reflects the utility weights assigned to each person's preferences at the time of marriage. These weights determine ex ante the relative allocation of resources between spouses (Theloudis et al., 2023). By employing appropriate estimation methods, the parameters used to maximize household utility can be estimated in a way that avoids the typical endogeneity issues associated with linear models (Wooldridge, 2001). The collective model posits that households pool their incomes, but their members have different preferences over consumption. Households maximize a weighted sum of the spouses' utilities where the weights define their relative bargaining power (Quisumbing et al., 2000). Because husbands and wives have different preferences over consumption, we can derive their relative bargaining power by observing which (categories of) goods the household consumes. We add to the literature by identifying bargaining power in a model with only household-level data on consumption and individual labor supply. We draw on the structures in Mazzocco (2007), Cherchye et al. (2012), Yamaguchi et al. (2014), and Lise & Yamada (2019). Following Blundell et al. (2005) and Lise & Yamada (2019), we also introduce home production, which we assumed uses the wife's nonworking time.

Consistent with, but somewhat lower than, findings in advanced economies, the wife's bargaining weight averages $.34-.35$, depending on the specification. Providing the more desirable *hukou* increases this weight by $.07$. This pattern is confirmed when we use a more detailed classification of *hukou* statuses. We also confirm the importance of social connections; an extra year spent in the household's location adds $.2$ percentage points to her bargaining weight.

As required for identification of bargaining weights, we find that husbands and wives have notably different preferences regarding consumption. The women strongly prefer spending on clothing, entertainment and education, and food, while men put more weight on alcohol and tobacco, home improvement, and transportation and utilities.

Prior research shows that before 1998, the *hukou* system increased the demand for wives with local-urban *hukou* (Han et al., 2015). We complement this literature by showing that it also increased such wives' bargaining power within marriage because it allowed them to set advantageous ground rules before marriage or directly affected bargaining after marriage. We are not the first to recognize that external forces, commonly called "distribution factors,"[1] such as sex ratios (Bobonis, 2009; Chiappori et al., 2002) and divorce laws (Chiappori, 1992; Chiappori et al., 2002; Browning et al., 1994), or social programs like PROGRESA (Bobonis, 2009; Attanasio & Lechene, 2002, 2014) and CT (Casco, 2023) can affect power within marriage. However, the pervasiveness of the *hukou* system in China, coupled with its imposition on individuals from birth, makes it particularly interesting.

1 Empirical applications of collective models

The versatility of collective models allows researchers to explore the impact of various social and personal factors on intra-household bargaining and allocations, which can then be tested with empirical data. Researchers can apply different commitment constraints—full-commitment, limited-commitment, or no commitment—over life cycle periods, depending on their research focus. When investigating external shocks occurring after marriage, full-commitment models are employed, requiring the strong assumption that these shocks do not directly affect Pareto weights (Mazzocco, 2007; Theloudis et al., 2023). However, if Pareto weights are influenced by shocks, limited or no commitment models are more appropriate. These models account for within-household renegotiation, allowing bargaining power to be independently

[1] We focus on a model in which the threat point does not directly affect the bargaining outcome. McElroy (1990) refers to the related concept of "extrahousehold-environmental parameters" that shift threat points in a model with Nash bargaining.

renegotiated in each period while considering the effects of contemporary shocks, leading to household utility maximization across all periods (Lise & Yamada, 2019). In the literature, shocks need not be entirely external or exogenous; they merely need to affect spouses disproportionately, thereby shifting bargaining power in favor of the impacted spouse.

Therefore, for policy shocks, full-commitment models are inappropriate for addressing transitional effects during policy implementation. If the transition occurs within a single period, the policy's effect can be considered a single-period problem. In the case of *hukou*, two key factors must be considered when examining the commitment behaviors of spouses. First, the potential *hukou* exchange happens only once after marriage, unlike the continuous shocks discussed in other literature. Thus, the shift in within-household bargaining power can be treated as a single policy shock. Second, our discussion of the *hukou* policy's effect is ex-post, focusing on post-marriage intra-household bargaining and assuming the existence of matching and marriage.

We will incorporate the role of *hukou* into the collective cooperative model, as introduced by Chiappori (1988, 1992). One key advantage of the collective model is that it eliminates the need to fully specify the outside options or threat points within the household. It can capture some of the same elements as alternative non-cooperative bargaining models (e.g., Lundberg & Pollak (1993)) and many cooperative models (e.g., Manser & Brown (1980); Manser & Brown (1980);McElroy & Horney (1981)). For example, if having good *hukou* improves the wife's outside option, we will capture this by a higher weight on her bargaining power.

As is generally true in cooperative and some noncooperative bargaining models, the collective model ensures that household decisions consistently lead to Pareto-optimal outcomes. The model can thus be thought of as summarizing the outcome of the intra-household bargaining process where the household lands on the Pareto frontier. The extent to which this outcome is favorable to a spouse is capture by their relative bargaining power.

This framework has been used widely. For instance, Chiappori et al. (2002) theoretically and empirically examines the impact of marriage markets and divorce legislation on household labor supply using a static collective model. Blundell et al. (2005) develops and estimates a static collective labor supply framework that accounts for censoring and nonparticipation in

employment. Donni (2004) demonstrates the identifiability and estimability of different aspects of a static collective model. Vermeulen (2005) highlights the advantages of collective models in estimating preferences and the intra-household allocation process using Dutch microdata. Browning & Gørtz (2012) explores the interaction between time allocation and expenditure within households. Cherchye et al. (2012) extends the model to include the consumption of domestic goods, focusing on couples with children in the Dutch context.

Our work is most closely related to papers exploring the factors that affect bargaining power and, in turn, on intra-household allocations. Duflo & Udry (2004) investigates resource allocation and insurance within households using data from Côte D'Ivoire. Blundell et al. (2007) estimates results for the collective model of labor supply, considering discrete choices, hour censoring, and non-participation in employment, particularly in response to significant wage changes in the U.K. Lise & Seitz (2011) employs a collective model of household behavior to explore how the increase in marital sorting by wages and working hours can explain consumption inequality in the U.K. Lise & Yamada (2019) utilizes panel data and a dynamic collective model to assess how limited commitment influences intra-household allocations.

One major contribution of our paper is to examine the effect of a factor that is likely to affect bargaining power but is exogenous. Identification of the empirical testing within this literature requires that market opportunities and home productivity are exogenous. However, when discussing the effects of external factors, the literature sometimes treats variables such as wages (e.g., Browning & Gørtz (2012); Lise & Yamada (2019)) and employment (e.g., Blundell et al. (2007)) that may the outcomes of bargaining as determinants of bargaining power. This connection raises endogeneity concerns.

2 The *hukou* system, social networks, and their impacts

Hukou is a household registration system based primarily on characteristics determined at birth by the parents' registration status. It plays a significant role in China's social, political, and economic life. The city, county, and sub-county where the individual is registered determine access to certain benefits.

These terms are somewhat misleading if used in the sense of North America or Europe. China is comprised of 700 cities covering essentially the entire country. The average city is 5,293 square miles, or a little smaller than Connecticut. The average population is about two million, making it somewhat less dense than Connecticut. China has 2,851 county-level divisions (1,355 counties) or about four counties per city, and, therefore, with an average population about equal to that of the average county in Connecticut. In sum, if we think of Connecticut as comprised of four counties instead of eight, each of which is somewhat less densely populated than Connecticut, we have an average Chinese city. Within each county, an individual's *hukou* may be associated with a rural or urban area.

Formally, Chinese citizens have either "agricultural" or "non-agricultural," more commonly called rural or urban, *hukou*. This terminology began to change at the beginning of this century. At the start of our same period, four provinces had partially canceled use of the terms agricultural and non-agricultural. However, residents are required to register at their birthplace, consistent with their parents' hukou location, whether urban or rural. Fundamentally, the welfare system remains unchanged (Wang et al., 2021). Therefore, each locality has local residents with urban *hukou*, local residents with rural *hukou*, non-local residents with urban *hukou*, and non-local residents with rural *hukou*.

The local government determines the social welfare benefits and opportunities available to individuals with each type of *hukou*. Typically, non-local residents have limited, if any, access to local government resources. Only local-urban residents benefit from high-quality resources because the most desirable resources (e.g., low-price public housing, top public schools, and favored university admissions) are located in urban areas (Song, 2014; Wang et al., 2021). Similarly, local governments and state-owned enterprises favor residents with local *hukou* when hiring. These jobs are usually stable and provide comprehensive social insurance. In principle, although other employers must participate in the social insurance system and cover employed migrants, enforcement remains very weak (Song, 2014). The specific benefits associated with *hukou* vary by province, city, and over time. Despite differences in the implementation of social benefits, there are consistent general trends. Table A1 in the appendix lists the general benefits

restricted by *hukou* types as a reference for readers unfamiliar with the system.

Some aspects of *hukou* are determined by the city. Consequently, the rights and benefits associated with it can differ significantly from one city to another. Workers are typically eligible for employment at a state-owned enterprise anywhere in the city where they have *hukou* (Wang et al., 2021). However, they may be able to purchase housing or access low-price public housing only in the county where their *hukou* is located. The schools their children may attend or the medical services they are entitled to may depend on where their *hukou* is within their county.

Hukou is assigned at birth. Before 1998, a child received its mother's *hukou.* Subsequently, parents may choose either parent's *hukou* (State Council of the People's Republic of China [1998] Order No.24). Since the 1990s, changing *hukou* has been possible. Still, until recently, local governments generally limited such switches to highly skilled and highly educated workers. Low-skilled migrant workers, unable to switch their *hukou*, face discrimination in formal jobs offering social protection (Gagnon et al., 2011).

Chinese households have a formal head registered with the local government. Traditionally, the husband is the head. However, if only the wife has local-urban *hukou,* registering the wife as the head is advantageous. Even if both have local-urban *hukou*, hers may be in a better school district. Wives who owned the house before marriage may also be designated as the head.[2] In contrast, if they have the same *hukou*, the choice of head is unimportant, and typically they choose the husband.

After marriage, one spouse may acquire the others *hukou* as a dependent (Regulations on Household Registration of the People's Republic of China, Chapter 19). Generally, they will choose the more lucrative one, local-urban *hukou*, if possible. The waiting period varies across localities and can be ten years in large cities like Beijing and Shanghai. In addition, there may be an age restriction, such as requiring the spouse changing their status to be at least 45 years old. Some localities allow migrant spouses to enjoy rights similar to their spouse's during the waiting period. Despite the low divorce rate in China, which was recorded at 0.96 per

[2] A *hukou* unit is associated with an address. Thus, a marriage always involves a transfer of *hukou*, which can be intra-city, inter-city, intra-province, etc. Wu & Zhang (2018) provides evidence that a household tends to register the wife as the head if she is the homeowner, especially when they also have school-age children.

1,000 population in 2000 according to the China Statistical Yearbook, when divorce occurs, the departing spouse has the option to retain their hukou status, revert to their original place of registration, or relocate to their new spouse's registered location (Regulations on Household Registration of the People's Republic of China, Chapter 10 and 19).

Furthermore, Chinese society relies heavily on personalized social networks called *guanxi*. *Guanxi* can be seen as a specialized local network system of social and influential relationships that facilitate business and personal interactions through mutual trust, reciprocity, and loyalty. Local-urban *hukou* is a natural indicator of strong *guanxi* in the locality. A son or daughter-in-law with strong *guanxi* can help expand the family's network. Parents frequently involve themselves in marriage and post-wedding decisions, expect the new family member to provide benefits, and exert strong mental pressure on the newcomer to do so (Huang et al., 2012). Hence, people prefer a spouse with local-urban *hukou*. Even if both partners have local-urban *hukou*, the one who had local-urban *hukou* earlier should have more social connections.

3 Data and descriptive statistics

The data come from the Urban Household Survey in China (UHS, National Bureau of Statistics of China, 2002-2006), which includes data from 31 provinces collected annually from 2002 to 2009 by the National Bureau of Statistics of China. The UHS gathered basic information such as gender, education, occupation, income, and social insurance and tax expenditures for each household member. It also includes household-level information on income, expenditures on food, clothing, home improvement, medicines, transportation, education, utilities, rent or mortgage, and other miscellany. We only use data from 2006 or earlier, as the labor force questions were discontinued after that year. On the positive side, this precedes any major *hukou* reforms, especially the introduction of the point-based system in 2011 and the National New-Type Urbanization Plan in 2014. One-third of the sample was replaced each year. Therefore, households are in our sample for up to three years but an average of two.

The survey was designed to uncover the dynamics of demographic, employment, income, education, consumption, cash holding, and residence of urban households in China. The house-

hold was measured based on the *hukou* structure, with a household head and dependents. Over 95% of households consist of only the head, their spouse, and any children. To the best of our knowledge, the UHS data provides the most comprehensive classification of consumption data for Chinese households, essential for estimating the connection between bargaining power and intra-household resource allocations.

We restrict the sample to married-couple households and drop those in which at least one spouse has reached retirement age (men > 60, or women > 55 or > 50 depending on occupation types) and those with less than 500 CNY annual income. Our final sample consists of 29,023 households. Measures reported in yuan are adjusted based on the CPI in the province/year where the household is located. The year 2000 serves as the time baseline.

3.1 *Hukou* measures

We have the following *hukou*/household head combinations:

1. Wife **reported as** household head
    (a) both spouses have local-urban *hukou* (8,263 households)
    (b) wife, but not husband, has local-urban *hukou* (84 households)
    (c) husband, but not wife, has local-urban *hukou* (32 households)
    (d) neither spouse has local-urban *hukou* (69 households)
2. Husband **reported as** household head
    (a) both spouses have local-urban *hukou* (19,699 households)
    (b) wife, but not husband, has local-urban *hukou* (87 households)
    (c) husband, but not wife, has local-urban *hukou* (349 households)
    (d) neither spouse has local-urban *hukou* (440 households)

Unfortunately, the data does not directly record the transition of *hukou* status during marriage. This means we cannot confirm whether individuals with the same *hukou* type, as seen

in the two (a) cases above, had identical or distinct *hukou* types when they married. In other words, some sample members may have acquired their current *hukou* statuses through their marital partners. This acquisition might be reflected in who is registered as the household head. Due to the patriarchy in China, males tend to be the household head. However, females with social or economic advantages can also be registered as the head (Hu, 2024). This provides us with a strategy to combine these two aspects to proxy whether a *hukou* transition occurred in the family. When we observe them, both spouses hold local-urban *hukou* in 98% of households where the wife is the household head. We infer that in such cases, either only the wife had local-urban *hukou*, or she had a form of local-urban *hukou* that was superior in social welfare and benefits to her husbands'. When only the wife has local-urban *hukou*, she is listed as household head roughly half the time. In contrast, when only the husband has this good *hukou*, he is the head over 90% of the time. Undoubtedly, we miss some cases where the wife contributed the better *hukou,* but the husband was still recorded as the head.[3]

Alternatively, we use a tighter set of criteria for determining initial *hukou* strength:

- Group A (*wife brought in hukou*): wife is the designated head and has local-urban *hukou* and either a) settled in the locality before her husband or was born locally *or* b) the husband does not have local-urban *hukou*. While we think of this variable as primarily identifying who brought the family good *hukou*, it also indicates that the wife is likely to have a stronger social network. (6,701 households)
- Group B: wife is not designated as head, but only she has local-urban *hukou*. (102 households)
- Group C: wife is not designated as head, and both have local-urban *hukou*. (21,130 households)
- Group D: neither has local-urban *hukou*. (509 households)
- Group E: only husband has local-urban *hukou*. (381 households)

[3]We cannot observe and may, therefore, miss some cases where the head is switched later in marriage. However, anecdotal experience from *hukou* offices suggests that, while permitted, such changes are very rare.

To increase statistical power in our estimations, we collapse these five categories into three, treating all cases where the wife does not have local-urban *hukou* together, regardless of the husband's status. We still treat Group A as a single case (6,701 households). We combine Groups B and C (21,232 households), and Groups D and E (827 households).

3.2 Summary statistics

Table 1 presents means and standard deviations of individual and household characteristics. Mean household income is $32,145$ CNY. Husbands earn 51% more, on average, than wives. Salary accounts for 80% of wives' incomes and 90% of husbands'. About one-fourth of non-salary income is not assigned to either spouse. 70% of families have two earners, consistent with the high labor-force participation rate among women in China.

Measuring incomes from the expenditure side shows that consumption plus savings and investment is ¥$31,031$, of which consumption accounts for 74%. The table shows consumption divided into (1) alcohol and tobacco, (2) clothing, (3) household supplies, (4) medical, (5) transportation and utilities, (6) entertainment and education, (7) rent or housing loans, (8) miscellaneous and (9) food consumed in the home.[4]

[Insert Table 1 here]

29% of households register the wife as the head, presumably most frequently because the wife had better *hukou* than her husband. Although almost the entire sample had local-urban *hukou* when interviewed, it is possible many obtained it through marriage or work. Only 63% of wives and 60% of husbands were born locally, and not all of these would have received local-urban *hukou* at birth.[5] 24% of wives and 35% of husbands have a college degree or above, which would also facilitate acquiring a more desirable form of *hukou*.[6]

[4]Food does not include dining out expenditures, which are included under miscellaneous.

[5]See conclusions in Johnson (2003) and Han et al. (2015).

[6]"College degree" is defined broadly to include full-time college and vocational institute education. The proportions of students attending colleges and vocational institutes after graduating high school are roughly equal. A

On average, wives are less than two years younger than their husbands and have reached an age at which fertility is likely to be complete. Of course, some are sufficiently young to have more children and others sufficiently old that the children have left home. The average household size is 2.94 persons.

4 *Hukou* affects power: reduced-form evidence

Drawing on the theory about distributional factors that influence bargaining power within households, we expect that wives will have more power in families when they bring in local-urban *hukou* or have better *hukou*. Thus, we expect wives to have their greatest bargaining power when they are in type-A or B households. She should have more power in type-C households than D and the least power in type-E households. We expect the wife's power to be highest when either she brought local-urban *hukou* to the household or she has local-urban *hukou* and her husband does not and to be lowest when he, but not she, has the good *hukou*. It is not obvious how to rank the cases where we have no evidence that she brought in local-urban *hukou* but both have it and when neither has it.

We begin by presenting reduced-form evidence on the relationship between the wife's *hukou* type and her bargaining power within the family, incorporating a wide range of control variables. Using linear regressions, we investigate how the rankings of *hukou* correlate with the wife's bargaining power, which is measured using specific proxies to be discussed shortly. Although linear regressions may encounter challenges related to endogeneity—where unobserved variables correlated with *hukou* types could bias the estimates—they nonetheless provide empirical support for previously proposed theories. Moreover, these regressions establish a foundation for subsequent structural estimation, which is less susceptible to traditional endogeneity issues in parameter settings.

One reason that better *hukou* could enhance a spouse's power is that it provides access

college orvocational institute degree is usually required to take a comparatively advanced civil servant job, generally regarded as the most stable occupation in China. Local governments reserve most of the positions for local residents.

to better jobs. In the Chinese context, better jobs are not only better paid but also provide access to better and more social benefits such as health insurance and subsidized housing. [7] We have no direct measure of these social benefits, but we can observe the proportion of the household's expenditure on social insurance contributed by the wife, a proxy for a combination of the income she brings to the household and the additional social benefit. The literature often treats relative income as a determinant of bargaining power (e.g., Mazzocco (2007) and Cherchye et al. (2012)), but the exogeneity of relative income is questionable. Here, we simply show that *hukou* status, which is exogenous to bargaining power, is associated with the direct material benefit each party brings to the household. If *hukou* affects bargaining power, this may be one of the mechanisms.

[Insert Table 2 here]

Table 2 shows the results of regressing her share of social insurance payments on measures of *hukou* status, number of children, age group dummies in ten-year intervals, time dummies, and province dummies. The first column measures *hukou* only by the dummy for group A, "Wife brought in *hukou*." It is associated with an increase in her share of sixteen percentage points and is significant at all conventional levels. The third column controls for whether the individuals hold a government job or position in a state-owned enterprise (nearly half the sample), which typically only hire people with local *hukou*. In a sense, this constitutes over-controlling since the spouses' ability to get these jobs is one of the ways that *hukou* status affects power. However, it is helpful to know whether this is the only mechanism. If so, we would probably prefer to use employment status rather than *hukou* status as a determinant of power. As expected, adding these controls somewhat lowers the coefficient. Importantly, it remains highly significant.

[7] The social insurance program in China includes five different kinds of insurance and one housing provident fund program. The housing provident fund allows individuals to voluntarily deposit part of their salaries towards the purchase of their first home and doubles their total deposits as a part of the payment (akin to a 401K with a government match in the United States but not just for retirement).

Columns (2) and (4) repeat the specifications in columns (1) and (3) but include more detailed measures of *hukou* status. As expected, "Wife brought in local-urban *hukou* " continues to be associated with a large increase in her share of payments relative to the case where both spouses have it, but she cannot be shown to have brought it in. There is also a large positive association between only her having the status and her contribution, although it loses significance when we control for the spouses' occupations. Also, as expected, she accounts for a substantially lower proportion of their social security contributions when only he has local-urban *hukou* compared with the case where neither has it. The last two columns address *guanxi* by looking at the effect of years lived in the locality, although, as we have noted, this is associated both with *hukou* quality and with who is likely to have brought it in. The coefficients on wife's and husband's years in the locality are roughly equal and opposite sign, indicating that each year difference in time since settling in the locality is associated with a three percentage point difference in her share.

In Table 3, we examine the relation between our *hukou* measures and shares spent on alcohol and tobacco, clothing, home improvement, and entertainment and education. Articles with empirical applications that feature a preference gap between different genders, such as Anderson & Baland (2002), Attanasio & Lechene (2002), Bobonis (2009), Doepke & Tertilt (2011), and Attanasio & Lechene (2014) show empowering wives' increases spending on items such as clothing (women's clothing), education and savings, which women traditionally prefer, and decreases spending on items such as alcohol and tobacco, which are treated as men's private goods. We confirm this finding when we estimate a structural model. As expected, if the wife brings the household local-urban *hukou*, the share of household spending on alcohol and tobacco falls by a statistically significant $0.5pp$ on a base of 2.3%. We find less clear evidence when we use narrow *hukou* categories. Spending on alcohol and tobacco is lowest when the wife brings in *hukou* or she has local-urban *hukou*, and he does not. However, the household does not spend more on these products when only he has local-urban *hukou* than when neither has it.

[Insert Table 3 here]

Similarly, as expected, the share of household expenditure on clothing is highest when she brought local-urban *hukou* to the household. Still, the gap between the cases where only she has good *hukou* and both do is small, and there is no significant difference between the cases when only he and neither has local-urban *hukou*.

We do not find strong evidence of a *hukou* effect on home improvement, possibly because spouses' preferences differ little. However, we do find an effect on education and entertainment. Although we find an effect when using only a binary *hukou* measure, this effect is driven by the difference between households in which at least one spouse has local-urban *hukou* and those in which neither spouse does and may, therefore, merely reflect access to education.

Attanasio & Lechene (2002) and Doepke & Tertilt (2011) use spending on different categories of clothing to test whether the PROGRESA program increased wives' bargaining power. Similarly, Browning et al. (1994) identifies a structural unitary model by assuming that husbands and wives each consume only their own clothes and not their spouse's. While we do not believe that spouses do not derive utility from each other's clothes, it seems intuitive that each spouse cares more about their own clothes. Therefore, in Table A2, we drill down further. The pattern in the table fits our expectations regarding expenditure on husband's and wife's clothing. *Hukou* combinations that should give her greater power result in more spending on the wife's clothing and less on her husband's. The evidence on children's clothing is less consistent with our expectations, showing little relation to expected bargaining power. Regarding the role of gender-based preference differences, a more detailed comparison will be provided in the section on the structural estimates.

5 The collective model with *hukou*

5.1 Static collective model

In this section, we show how to derive husbands' and wives' bargaining power when we have data only on aggregate household consumption within categories. Intuitively, we can think of the household as determining, for example, how much it should spend on clothes for each member and how much on alcohol. Alternatively, it could proceed in two steps. It could decide how much to spend on clothing and how much on alcohol. Then noting how much it had allocated for each category, it would allocate the expenditure on clothing among its members and similarly for alcohol. If the household maximizes a social welfare function, the two processes will lead to exactly the same allocation. Suppose that wives' marginal propensity to consume clothing is higher and their marginal propensity to consume alcohol lower than their husbands'. Transferring bargaining power from husbands to wives will increase the household's consumption of clothing and reduce its consumption of alcohol. Thus, we can infer bargaining power from household consumption even if all goods are private. We further facilitate identification by assuming that the wife does not consume her husband's leisure. [8]

We draw heavily on the collective household model of Chiappori (1988, 1992) and Lise & Seitz (2011). As demonstrated in Section 1, the collective model without commitment is well-suited for investigating the effects of policy shocks. For empirical testing, this non-commitment model offers the significant advantage that each single period in the intertemporal utility maximization problem is independent and can be treated as a static collective model (Mazzocco, 2007; Lise & Yamada, 2019; Theloudis et al., 2023). Following Mazzocco (2007), Yamaguchi et al. (2014) and Lise & Yamada (2019), we allow for intertemporal decisions about resource allocation and altruistic behavior. However, neither is essential to our approach, and we quickly reduce the model to a static framework. We treat all goods as private and abstract from any pleasure that husbands and wives receive from the other's consumption. It should be apparent that doing so simplifies the presentation without altering the conclusions. The extension of the

[8] Without this assumption, we could, in essence, arbitrarily assign tastes to either party and flip the sign on the distribution factors depending on our choice.

fully private good to public goods is addressed in Blundell et al. (2005).

A family (F) consists of a husband (H), wife (W), and, possibly, children (K). The couple determines consumption and labor supply. All family members consume, but children cannot work or bring in income. The wife and husband have egoistic utility functions $u^W(\cdot)$ and $u^H(\cdot)$ that depend on their final goods consumption, c^W or c^H, their leisure time (nonworking time), ℓ^W or ℓ^H, and their consumption of home goods, q^W or q^H, produced from purchased intermediate products, g. In addition, both spouses derive utility from the children's consumption of goods, c^K and q^K. We use superscript F to denote household totals so that $c^F \equiv c^W + c^H + c^K$.

The household utility maximizes a weighted average of wife's and husband's utilities. Thus, in a single period, household utility V^F is

$$V^F(c_t^W, c_t^H, c_t^K, \ell_t^W, \ell_t^H, q_t^W, q_t^H, q_t^K) = \upsilon u^W(c_t^W, \ell_t^W, q_t^W, c_t^K, q_t^K) + (1-\upsilon) u^H(c_t^H, \ell_t^H, q_t^H, c_t^K, q_t^K) \tag{1}$$

where υ is the wife's weight in the utility function or her bargaining power. Equivalently, $1-\upsilon$ equals the husband's weight. Note that children's consumption, not their utility, directly enters the husband and wife's utility. Also, note that the collective model allows us to avoid specifying the spouses' outside options.

We assume that q_t is produced from intermediate goods and wife's nonworking time according to a constant-returns-to-scale production function.

$$q_t = q(g_t, \ell_t^W). \tag{2}$$

Consistent with the low participation of Chinese men in household chores, the husband does not engage in home production. Note that this specification does not imply that the wife spends all of her nonmarket time on home production. Following the convention in empirical time-use research, we allocate a reasonable amount of time (8 hours) for sleep and rest (Lise & Yamada, 2019). This means her nonmarket time serves as a sufficient statistic for her direct contribution to home production, given the strong correlation between the two. While this assumption is strong, it is necessary due to the survey's lack of direct data on the exact amount of time individuals spend on home production.

We assume that the household maximizes the discounted present value of lifetime utility $\Sigma_{t=t_0}^{\infty}\beta^{t-t_0}V_t^F$ where β is the spouses' common discount factor. Since the no-commitment collective model can treat each period as an independent utility maximization problem, this maximization is subject to a per-period time constraint for each spouse, which is also independent of other periods:

$$h_t^j + \ell_t^j = 1, \quad j \in \{W, H\} \tag{3}$$

and a household lifetime budget constraint. h_t^j is the time on market work.

We reduce the dynamic problem to a static one by assuming that the household maximizes within-period utility given an optimally chosen savings path. Thus, the household maximizes (1) subject to a one-period budget constraint where consumption equals income minus net savings

$$c_t^F + g_t^F + s_{t+1}^{*F} = w_t^W h_t^W + w_t^H h_t^H + (1 + r_t)s_t^{*F} \tag{4}$$

where s_{t+1}^{*F} is the optimal savings carried over to the next period in the intertemporal model, and s_t^{*F} is the savings level carried over from the prior period in that model.

5.2 Resource allocations to different types of goods

Similar to the majority of surveys, we possess data solely on aggregate household consumption. Hence, it is convenient to consider the household's problem as a two-stage resource allocation process. The first stage involves the allocation of consumption across (sets of) goods, while the second stage pertains to the distribution of these goods among family members.

Our approach is without loss of generality. The household will choose $c^{F*} = c^{W*} + c^{H*} + c^{K*}$ and $q^{F*} = q^{W*} + q^{H*} + q^{K*}$ for the first-stage allocations and then allocate consumption exactly as in the one-shot solution.

Thus, we maximize

$$U_t^F(c_t^F, \ell_t^W, \ell_t^H, q_t^F) = \mu U_t^W(c_t^F, \ell_t^W, q_t^F) + (1 - \mu)U_t^H(\, c_t^F, \ell_t^H, q_t^F) \tag{5}$$

subject to (2), (3), and (4), and the non-negativity constraints

$$c_t,\ \ell_t,\ h_t,\ q_t,\ g_t \geq 0. \tag{6}$$

Thus, equation(5) delineates the initial stage, illustrating how the household determines its expenditures on various types of goods. Equation (1) represents the final distribution of different types of goods to each individual. Estimating the first stage not only proves to be more practical and feasible but also more intriguing, as it reveals the negotiation process between spouses influenced by their varying importance and preferences.

Note that U and u are different functions with different arguments. While not our primary motivation, this framework also allows us to avoid claiming that certain goods are public and others private. In other words, μ serves as a proxy for υ. Note further that while modeling household decisions as a two-step process is common in this literature as in Chiappori (1992) and Blundell et al. (2005), we do not intend the two-step model as a description of the household's decision process. We argue only that if the household's choices are Pareto efficient, total household consumption can be represented by (5).

5.3 Parameterization

We assume each spouse has a constant-elasticity of substitution utility function

$$U_t^j(\boldsymbol{c}_t^F, q_t^F, \ell_t^j) = \frac{1}{1-\sigma^j}\left(\boldsymbol{\tau}_{1,t}^j(\boldsymbol{c}_t^F)^{\psi^j} + {\tau_{2,t}}^j(q_t^F)^{\psi^j} + \tau_{3,t}^j(\ell_t^j)^{\psi^j}\right)^{\frac{1-\sigma^j}{\psi^j}} \tag{7}$$

where $j \in \{W, H\}$, $\boldsymbol{c}^F = (c_1^F, c_2^F, \cdots, c_n^F)'$ is the vector of goods the family consumes and $\boldsymbol{\tau}_{1,t}^j = ({\tau_{1,1,t}}^j, {\tau_{1,2,t}}^j, \cdots, {\tau_{1,n,t}}^j)$ is the vector of the corresponding coefficients in the utility function at time t. The spouses may weight goods differently; we allow the weights to vary with age. Similarly, ${\tau_{2,t}}^j$ shows the husband's and wife's preferences for the home-produced good. We abuse notation by using $(\boldsymbol{c}_t^F)^{\psi^j}$ to refer to each element of the vector raised to the power ψ^j.

We impose that $\boldsymbol{\tau}_{1,t}^j \cdot \mathbf{1} + \tau_{2,t}^j + \tau_{3,t}^j = 1$ by modeling the preference parameters as

$$\tau_{i,t}^j = \frac{exp(\boldsymbol{\nu}_i^j \cdot \boldsymbol{x}_{j,t}^j)}{1 + \Sigma_{k=1}^n \exp(\boldsymbol{\nu}_{1,k}^j \cdot \boldsymbol{x}_{j,t}^j) + exp(\boldsymbol{\nu}_2^j \cdot \boldsymbol{x}_{j,t}^j)} \text{ for } j = \text{ H,W} \tag{8}$$

where $\boldsymbol{x}_{j,t}^{j}$ consists of individual characteristics at time t, and $\boldsymbol{\nu}_{i}^{j}$ is a corresponding vector of parameters showing how these characteristics shift preferences. Due to computational limitations, x consists of a constant and the wife's or husband's age. We primarily focus on how gender and age affect preferences for different types of consumption, as consumption preferences mainly change with individuals' age (Becker & Mulligan, 1997). This approach aligns with the strategy used by Cherchye et al. (2012) to avoid over-specifying the model. Additionally, the preference parameters reflect the relative preferences for one type of good over another, meaning that external factors play a less significant role in altering these comparative preferences. Based on the reduced-form evidence, we further incorporate the number of children as a factor influencing the preference for clothing and education and entertainment expenditures for the wife's utility. With a slight violation of notation, (8) holds for each of the n categories of final good consumption and the intermediate good.

To ensure that bargaining power (or the Pareto weights) is between 0 and 1, we impose

$$\mu_t = \frac{exp(\boldsymbol{\mu_0} \cdot \boldsymbol{Z}_0 + \boldsymbol{\mu_1} \cdot \boldsymbol{Z}_t)}{1 + exp(\boldsymbol{\mu_0} \cdot \boldsymbol{Z}_0 + \boldsymbol{\mu_1} \cdot \boldsymbol{Z}_t)} \tag{9}$$

where $\boldsymbol{Z}_0$ and $\boldsymbol{Z}_t$ incorporate the *hukou*-related factors on which we focus. We use the same classifications of *hukou* as in the reduced-form (Tables 2 and 3). The subscripts 0 and t are utilized to differentiate between the Hukou status at the time of marriage and the present status only for notation purposes. We pool all the samples without emphasizing their time series characteristics. The time subscript is primarily used for notation and to maintain consistency with subsequent interpretations. It is important to note that while the hukou distribution factors are discrete variables, they exhibit variation only across different samples, not within the same sample in the context of Pareto weights. Therefore, it can be concluded that the hukou status does not influence the labor supply behavior of the same sample over time as suggested by Kapan (2010).

Finally, we impose that home production is Cobb-Douglas in wife's leisure and intermediate goods, which we measure as food consumed in the home

$$q_t^F = q(g_t, \ell_t^W) = (\ell_t^W)^\rho (g_t^F)^{1-\rho}. \tag{10}$$

Similar to the identification of preferences, the home production parameter is also parameterized with the number of children (x_t^c):

$$\rho = \frac{exp(\iota_0 + \iota_1 \cdot x_t^c)}{1 + exp(\iota_0 + \iota_1 \cdot x_t^c)}. \tag{11}$$

It is common to assume that wives are indifferent between time spent on home and market production. However, we do not impose this condition and, therefore, cannot test whether home production is efficient.

5.4 Estimation

We estimate the model using the nonlinear generalized method of moments (GMM), addressing potential endogeneity in the linear regression where hukou status may correlate with unobserved variables that influence family expenditure and consumption behaviors. GMM has recently proven effective for estimating certain nonlinear models with endogenous explanatory variables, particularly when these variables do not appear additively in the equation. This method is particularly efficient in cases involving exponential functions with endogenous variables. GMM is frequently applied to unobserved effects models, especially when explanatory variables are not strictly exogenous, even after accounting for unobserved effects. Utilizing GMM can also enhance estimations when standard estimators fall short due to failed auxiliary assumptions (Wooldridge, 2001).

We derive the first-order conditions with respect to consumption $\{\boldsymbol{c}_t^F, g_t^F\}$ and leisure $\{\ell_t^W, \ell_t^H\}$ in the first part of Appendix A.2. From these, we derive marginal rate of substitution equations that allow us to construct moment constraints. The substitution between two consumption items i and k is

$$\frac{\mu_t \left(A_t^W\right)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \tau_{1,i,t}^W (c_{i,t}^F)^{\psi^W-1} + (1-\mu_t)\left(A_t^H\right)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \tau_{1,i,t}^H (c_{i,t}^F)^{\psi^H-1}}{\mu_t \left(A_t^W\right)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \tau_{1,k,t}^W (c_{k,t}^F)^{\psi^W-1} + (1-\mu_t)\left(A_t^H\right)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \tau_{1,k,t}^H (c_{k,t}^F)^{\psi^H-1}} = 1 \tag{12}$$

where $A_t^j = \boldsymbol{\tau}_{1,t}^j (\boldsymbol{c}_t^F)^{\psi^j} + {\tau_2}^j (q_t^F)^{\psi^j} + \tau_3^j (\ell_t^j)^{\psi^j}$.

The marginal rate of substitution between a final good i and the intermediate good g_t^F is:

$$\begin{aligned}
&\mu_t \big(A_t^W\big)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \tau_{1,i,t}^W (c_{i,t}^F)^{\psi^W-1} + (1-\mu_t)\big(A_t^H\big)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \tau_{1,i,t}^H (c_{i,t}^F)^{\psi^H-1} \\
=&(\ell_t^W)^{\rho}(1-\rho)(g_t^F)^{-\rho}\big[\mu_t \big(A_t^W\big)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \tau_2^W (q_t^F)^{(\psi^W-1)} + (1-\mu_t)\big(A_t^H\big)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \tau_2^H (q_t^F)^{(\psi^H-1)}\big]
\end{aligned} \tag{13}$$

The first-order conditions for the optimal leisure time for the wife ℓ_t^W and husband ℓ_t^H imply the marginal rates of substitution between leisure time and final good i or intermediate goods g_t^F is:

$$\begin{aligned}
&\frac{\mu_t}{w_t^W}\big(A_t^W\big)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \big[\tau_2^W (q_t^F)^{\psi^W-1}\rho(\ell_t^W)^{\rho-1}(g_t^F)^{1-\rho} + \tau_3^W (\ell_t^W)^{\psi^W-1}\big] \\
=&\mu_t \big(A_t^W\big)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \tau_{1,i,t}^W (c_{i,t}^F)^{\psi^W-1} + (1-\mu_t)\big(A_t^H\big)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \tau_{1,i,t}^H (c_{i,t}^F)^{\psi^H-1}
\end{aligned} \tag{14}$$

and

$$\begin{aligned}
&\frac{\mu_t}{w_t^W}\big(A_t^W\big)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \big[\tau_2^W (q_t^F)^{\psi^W-1}\rho(\ell_t^W)^{\rho-1}(g_t^F)^{1-\rho} + \tau_3^W (\ell_t^W)^{\psi^W-1}\big] \\
&= (\ell_t^W)^{\rho}(1-\rho)(g_t^F)^{-\rho}\big[\mu_t \big(A_t^W\big)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \tau_2^W (q_t^F)^{(\psi^W-1)} + (1-\mu_t)\big(A_t^H\big)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \tau_2^H (q_t^F)^{(\psi^H-1)}\big]
\end{aligned} \tag{15}$$

for wives, and

$$\begin{aligned}
&\frac{1-\mu_t}{w_t^H}\big(A_t^H\big)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \tau_3^H (\ell_t^H)^{\psi^H-1} \\
=&\mu_t \big(A_t^W\big)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \tau_{1,i,t}^W (c_{i,t}^F)^{\psi^W-1} + (1-\mu_t)\big(A_t^H\big)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \tau_{1,i,t}^H (c_{i,t}^F)^{\psi^H-1}
\end{aligned} \tag{16}$$

$$\begin{aligned}
&\frac{1-\mu_t}{w_t^H}\big(A_t^H\big)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \tau_3^H (\ell_t^H)^{\psi^H-1} \\
=&(\ell_t^W)^{\rho}(1-\rho)(g_t^F)^{-\rho}\big[\mu_t \big(A_t^W\big)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \tau_2^W (q_t^F)^{(\psi^W-1)} + (1-\mu_t)\big(A_t^H\big)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \tau_2^H (q_t^F)^{(\psi^H-1)}\big]
\end{aligned} \tag{17}$$

for husbands. Additionally, the marginal rate of substitution between wife's and husband's leisure time is

$$\frac{\mu_t}{1-\mu_t}\frac{w_t^H}{w_t^W}\left(A_t^W\right)^{\frac{1-\sigma^W-\psi^W}{\psi^W}-\frac{1-\sigma^H-\psi^H}{\psi^H}} = \frac{\tau_3^H(\ell_t^H)^{\psi^H-1}}{\tau_2^W(q_t^F)^{\psi^W-1}\rho(\ell_t^W)^{\rho-1}(g_t^F)^{1-\rho}+\tau_3^W(\ell_t^W)^{\psi^W-1}}. \tag{18}$$

Equation (12), which governs substitution between pairs of goods, allows us to construct 28 moment constraints. We get 8 moment constraints from the relation between the intermediate good and eight final goods in (13). Equations (14) to (18) provide 19 moment constraints (substitution between final goods and wife's leisure (8); between final goods and husband's leisure (8); between the intermediate good and wife's or husband's leisure (2); between wife's and husband's leisure (1)) for a total of 55 moment constraints.

There are 36 taste parameters $\{\nu_i^j\}$: a constant and a coefficient on age for home production and each of eight categories of final goods, for each spouse separately $(2 * 9 * 2 = 36)$. The constraint that the weights on the goods sum to 1 determines the preference for leisure. Additional parameters determine the home production function. Two parameters, ψ^W and ψ^H, are related to the elasticities of substitution, and two parameters, σ^W and σ^H, are related to the degrees of homogeneity of the spouses' utility functions. Lastly, the Pareto weights (bargaining power) are determined by the coefficient vector $\{\boldsymbol{\mu_0}, \boldsymbol{\mu_1}\}$.

The model is identified primarily by the assumption that the wife does not value her husband's leisure and that the husband values his wife's leisure only through its effect on home production. If each spouse received utility from the other's leisure, we could not, for example, distinguish a world in which the wife has a lot of power and values her leisure highly from one in which she has little power, but her husband values her leisure highly. The closest equivalent is Browning et al. (1994) who assume that husbands and wives do not derive utility from their spouse's clothes.

In a broader sense, differences in husbands' and wives' consumption preferences identify the model. If men tend to value alcohol and tobacco more highly, the household will consume more alcohol and tobacco when the husband has more bargaining power. If the wife has more bargaining power, she may work less. Given these taste differences, we would infer that in households where her leisure is high, she has high power, whereas he has more power when

spending on alcohol and tobacco is high. Thus, we implicitly assume that the couple's *hukou* status can only affect the expenditure distribution through its effect on bargaining power. If wives and husbands want to spend more on clothing when she brought local *hukou* into the family, this assumption will be violated.

In the body of the paper, we summarize preferences for final goods: $\boldsymbol{\tau}^{j}_{1,t}$, the intermediate good: $\tau^{j}_{2,t}$, and leisure at the sample means. Our focus is on bargaining power, for which we provide estimates both at sample means and of the effect of *hukou.* We use the delta method to calculate the standard errors at these means.

6 Results

We show that husbands and wives have different preferences over classes of goods and use these differences to estimate the effect of *hukou* and social networkson bargaining power. We present the results in the opposite order, focusing first on the determinants of bargaining power, our main contribution, before showing the taste preferences that identify bargaining power.

6.1 Better *Hukou* Raises Bargaining Power

The first column in Table 4 uses the binary distinction, whether the wife is the recorded household head. The first row shows the wife's mean bargaining weight is about $.35$, which is somewhat low relative to estimates in developed countries (e.g., 0.5 to 0.52 in the US (Del Boca & Flinn, 2012) and 0.43 to 0.44 in Japan (Lise & Yamada, 2019))[9]. As expected, an advantageous *hukou* gives wives more power. The $.33$ coefficient on "wife is household head" translates into about a $.07$ higher bargaining weight at the mean, representing an approximate 20% increase from the sample average.

[Insert Table 4 around here]

[9]The weight is calculated at average age, average number of children, and proportion wife household head.

Column (2) adds the spouses' current *hukou* status. Once we control for who is household head, neither her nor his current *hukou* status enters statistically significantly. However, both are imprecisely measured, and the coefficient on her status is large and positive. Importantly, adding these variables has no notable effect on the relation between her power and whether she is the household head.

The last column specifically focuses on the *guanxi* aspect of *hukou*. Directly observing the exact strength of guanxi is challenging, especially in a nationwide consumption-based survey. Social network research often uses the time people interact with others locally to proxy social network strength, known as weak social network ties (Granovetter, 1973). In this empirical test, we use the total time a person has lived in the community as a proxy for the strength of their social network (weak tie). This approach not only considers the duration of their interactions with local people but also, as previously noted, the possibility that the wife's *guanxi* may influence her selection as household head. For instance, this could occur if she owned the family's house before marriage. As expected, time lived in the community has a positive effect on a spouse's bargaining power, although the effect falls well short of significance for husbands. A one-year increase in the wife's years in her current town raises her bargaining weight by .2 percentage points at the mean, but this estimate is somewhat imprecise, while the point estimate for husbands is only about one-fourth of that for wives. These findings suggest that *guanxi*, a crucial social tie that connects people's economic, political, and social lives, influences intra-household allocations and bargaining power. While the effect of a single additional year is small, it can lead to a significant cumulative effect over time, given the average age of the sample.

Column (2) suggests that current *hukou* status may be unimportant, while columns (1) and (3) suggest that *hukou* status at time of marriage and *guanxi* may both be important. Table 5 addresses the combined role of these two factors directly and explores the role of current *hukou* status more fully.

Column I of Table 5 uses the variable "wife brought in *hukou,*" which equals 1 if either the wife is the head or she has lived in the town longer than her husband has to capture the likelihood that she has the greater *guanxi*. The coefficient remains significant, but its magnitude

falls by roughly 7 percent, and its standard error increases by about a fifth.

Column II adds whether she has local *hukou* but did not provide the family with local-urban *hukou.* This specification provides a clearer picture. Recall that these two groups comprise 97% of our sample. Therefore, it is not surprising that the difference in wives' bargaining power in households where she brought in *hukou* relative to where she has local-urban *hukou* is similar to the difference between the first group and all other households combined. More striking is the large difference in bargaining power between wives with and without local-urban *hukou* in families where she did not bring this *hukou* status to the family. Wives with local-urban *hukou* but who were not responsible for their family's *hukou* status still have 24% more bargaining power than those without local-urban *hukou*. Families who rely on the wife for better *hukou* see the wives enjoy a Pareto weight of 0.3939 on average, which is 19% and 48% higher than the weight of the wives who are in the groups that do not rely on the wives for *hukou*, and who have and do not have local-urban *hukou*.

[Insert Table 5 here]

Column (3) further divides the group where she has local-urban *hukou* but did not bring this status to the household where the husband has and does not have local-urban *hukou*. The latter case is unusual. It means that the wife is not the listed head of household, and the husband has lived in the town at least as long as the wife has, but he does not yet have local-urban *hukou*. We also divide the households where the wife does not have local-urban *hukou* into those in which the husband does and does not. We expect the wife to have more bargaining power when she, and not her husband, has local urban *hukou*. The point estimates do not support this expectation, but the estimates are sufficiently imprecise that we can conclude very little from this comparison. As expected, when the wife does not have local-urban *hukou*, she has more power when her husband also does not have it (the excluded category) than when he does. However, the estimates are again too imprecise to permit any strong conclusions.

We have not focused on the role of children in affecting bargaining power. However, we

consistently find that an additional child reduces the wife's bargaining power, consistent with the reduced-form evidence (see the results on the number of children variable in Tables 2, 3, and A2). We are cautious about interpreting this effect as causal. Lower-income and less-educated families tend to have more children in China, and, in developed countries, at least, these characteristics are associated with lower bargaining power of the wife. Moreover, the labor-supply reducing effect of children may reduce the wife's market income and, thus, her power in decision-making. Similar outcomes have been confirmed elsewhere, such as in Mazzocco (2007) and Lise & Yamada (2019).

6.2 Husbands and Wives Have Different Preferences over Consumption

The preference parameters in the utility function represent the relative importance a person places on various consumption goods. A larger weight indicates that the good provides more utility to the individual. Although the unitization of preference parameters prevents direct comparison of a good's weight between genders, we can still compare preference parameters across different goods to understand their relative importance to an individual.

The lower panels of Table 4 and Table 5 present our estimates of the weights assigned by wives and husbands to different categories of goods and home production at the average age of the sample. These results reveal the level of preference for various types of goods for an average man or woman in the sample. However, personal and family characteristics can influence these preferences. For estimates of how individual characteristics affect preferences, refer to the second part of Appendix A.2.

On average, the wife places less weight on each category of consumption than her husband does. Since the weights on goods and nonmarket time must sum to 1, she must place more weight on her nonmarket time than he does on his. Similarly, Anderson & Baland (2002) find that wives value savings more than spending on consumption. There are also large differences in the relative weights placed on different categories. In terms of the percentage of the preference parameter for each consumption category, his weight on alcohol and tobacco is almost twenty times hers. In contrast, his weight on clothing is only about three times hers. This implies that

she values clothing relative to alcohol and tobacco much more than he does. Doepke & Tertilt (2011) reach a similar conclusion. Among consumption goods, wives also put more weight on entertainment and education than on other spending.

Recall that we do not impose that home production is 'efficient' in the sense that the wife's value of marginal product in home production equals her market wage. This is because she may enjoy time spent on home production more or less than time spent working in the market. Nevertheless, we can test whether this constraint holds in our data. We write the constraint as $\rho = \frac{w^W \ell^W}{g^F + w^W \ell^W}$ for each period. The right-hand side $\frac{w^W \ell^W}{g^F + w^W \ell^W}$ has a sample mean of 0.8274 and the 95% confidence interval is $[0.8261, 0.8288]$, far higher than our estimates of ρ in Table 4 and Table 5. This suggests that "wives spend too much time on home production," presumably because they find home-production time more enjoyable than time spent working in the market.

Conclusions

We examine how policies that determine a person's legal status impact intrahousehold bargaining by analyzing a nationwide restrictive policy in China known as the hukou system, considering gendered preferences. The potential change in social status through marriage acts as a single-period shock, enabling us to construct a no-commitment collective model that incorporates hukou status and its transition into Pareto weights. We investigate how the hukou a person brings into a marriage alters intrahousehold bargaining power, accounting for gendered preferences between spouses. Despite lacking data on individual consumption within households, we can infer bargaining weights because husbands and wives have distinct preferences for goods, particularly in the relative importance they place on alcohol and tobacco versus clothing. This allows us to explore how the hukou status of individuals in a couple affects their bargaining power.

We find that wives in China generally have less bargaining power than their husbands and are, therefore, disadvantaged in the distribution of household resources. The average wife's Pareto weight is between 0.34 and 0.35, somewhat smaller than found in developed countries. However, if the wife brought local urban *hukou*, which allows family members to enjoy better

public services, her bargaining power is about 19.4% (about $7pp$) higher than the bargaining power of a wife whose family does not rely on her for *hukou*. *Guanxi* or social networks are also important in deciding individuals' bargaining power. Wives with stronger local *guanxi*, as measured by the years they have been living in their current town, have higher bargaining power by roughly 0.2 percentage points per year lived in the town.

The barriers to obtaining *hukou* have gradually lessened thanks to a series of reforms since China started to move towards a market economy. This has significance far beyond the topic of this paper. Nonetheless, it is important to recognize that these reforms will alter bargaining power within the household.

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Tables

Table 1: Summary statistics

	Mean (std. dev.)	
Panel A	Household	
Total income	32144.61 (22609.62)	
Salary income	26832.78 (20511.53)	
Dual-earner (full-time) ratio	0.7 (0.46)	
Number of children	0.94 (0.47)	
Total expenditure	31031.01 (36423.65)	
Consumption	22830.71 (18247.9)	
Alcohol and tobacco	730.58|2.27% (1028.75)	
Clothing	2454.56|7.64% (2241.68)	
Home improvement	1308.08|4.07% (2696.55)	
Medical	1351.07|4.20% (2846.6)	
Transportation and utility	2900.75|9.02% (8533.58)	
Entertainment and education	3720.85|11.58% (5044.86)	
Rent	2109.3|6.56% (4868.32)	
Misc.	796.5|2.39% (1332.56)	
Food	8189.61|25.48% (4456.36)	
Panel B	Wife	Husband
Age	42.95 (7.31)	44.6 (7.36)
College Degree	0.24 (0.42)	0.35 (0.48)
Working hours/m	132.97 (78.13)	171.07 (42.88)
Urban *hukou*	0.976	0.983
Local urban *hukou*	0.969	0.977
Years in town	18.88 (12.94)	20.56 (12.23)
Household head	0.291	0.709

Notes: The summary statistics presents the mean values of variables with standard deviations in the parentheses. The income catagories include zero-income individuals. In the consumption subgroup part, the percentages behind | stand for the amount to the total income. The sample comprises 29,023 households in total from year 2002 to 2006. The currency values are adjusted according to the CPI in each province. The sum of the nine catagory expenditure is not exactly same as the total because of the missing reports of some households in subcatagories. The residual catagory (the difference between the total income and the total consumption) is the net savings. Dual-earner family is the family with two full-time earners. A full-time earner is defined as a worker who spend more than 100 hours per month in the labor market. College degree proportion is the proportion of those have attended vocational institutes or colleges or higher.

Table 2: Reduced-form evidence I: *hukou* and wife's contribution on social insurance

Variable:	Dependent variable: Wife's social insurance expenditure / Total social insurance expenditure					
Wife brought in *hukou*	0.161		0.125			
	(0.006)		(0.006)			
Group A		0.202		0.130		
(wife brought in *hukou*)		(0.041)		(0.037)		
Group B		0.197		0.090		
(wife didn't bring in *hukou* & she has		(0.076)		(0.071)		
local urban *hukou* and he doesn't)						
Group C		0.043		0.006		
(wife didn't bring in *hukou* & she and		(0.041)		(0.036)		
he both have local urban *hukou*)						
Group E		-0.126		-0.098		
(wife didn't bring in *hukou* & he has		(0.045)		(0.040)		
local urban *hukou* and she doesn't)						
Wife years since settling					0.030	0.020
					(0.007)	(0.006)
Husband years since settling					-0.027	-0.022
					(0.008)	(0.006)
Number of children	-0.029	-0.029	-0.020	-0.020	-0.033	-0.023
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)
Wife occupation			×	×		×
Husband occupation			×	×		×
Wife and husband age groups	×	×	×	×	×	×
Time fixed effects	×	×	×	×	×	×
Province fixed effects	×	×	×	×	×	×
Observations	23,615	23,615	23,615	23,615	23,615	23,615
R^2	0.145	0.149	0.314	0.316	0.098	0.287

Note: Standard errors in brackets and errors are clustered at the household level. The spending is monthly based on the currency of *yuan*, and the values are log linearized. Groups are arranged according to the assumed bargaining power ranks of wives within families (A is highest). The baseline group is Group D, where neither spouse has local urban *hukou.*

Table 3: Reduced-form evidence II: *hukou* and consumption on different items

	Consumption to the total income							
Variable:	Alcohol and tobacco		Clothes		Home improvement		Education and entertainment	
Wife brought in *hukou*	-0.005		0.007		0.001		0.006	
	(0.001)		(0.001)		(0.001)		(0.002)	
Group A		-0.009		0.017		0.012		0.039
(wife brought in *hukou*)		(0.002)		(0.003)		(0.002)		(0.006)
Group B		-0.011		0.014		0.013		0.027
(wife didn't bring in *hukou* & she has		(0.004)		(0.007)		(0.007)		(0.018)
local urban *hukou* and he doesn't)								
Group C		-0.005		0.010		0.012		0.034
(wife didn't bring in *hukou* & she and		(0.002)		(0.003)		(0.002)		(0.006)
he both have local urban *hukou*)								
Group E		-0.003		0.002		0.010		0.031
(wife didn't bring in *hukou* & he has		(0.003)		(0.004)		(0.004)		(0.010)
local urban *hukou* and she doesn't)								
Number of children	0.001	0.001	0.005	0.005	-0.001	-0.001	0.028	0.029
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Wife and husband age groups	×	×	×	×	×	×	×	×
Time fixed effects	×	×	×	×	×	×	×	×
Province fixed effects	×	×	×	×	×	×	×	×
Observations	29,023	29,023	29,023	29,023	29,023	29,023	29,023	29,023
R^2	0.074	0.075	0.084	0.084	0.01	0.01	0.012	0.013

Note: Standard errors in brackets and errors are clustered at the household level. The spending is monthly based on the currency of *yuan*, and the values are log linearized. Groups are arranged according to the assumed bargaining power ranks of wives within families (A is highest). The baseline group is Group D, where neither spouse has local urban *hukou.*

Table 4: Structural estimation I: *hukou* types, preferences and bargaining power

	Hukou types and *guanxi* (years since settling)		
	(1)	(2)	(3)
Pareto weight (bargaining power)			
μ (sample average)	0.354	0.348	0.353
	(0.129)	(0.184)	(0.117)
Pareto weight parameters			
Wife household head	0.329	0.303	
	(0.022)	(0.083)	
Wife local urban *hukou*		0.346	
		(0.533)	
Husband local urban *hukou*		-0.050	
		(0.504)	
Wife years since settling			0.211
			(0.088)
Husband years since settling			-0.055
			(0.130)
F-test Chi-square		0.921	
F-test P-value		0.631	
Home production			
ρ	0.087	0.143	0.116
	(0.040)	(0.061)	(0.070)
Preference			

	Wife	Husband	Wife	Husband	Wife	Husband
Alcohol and tobacco	0.0029	0.0569	0.0001	0.0582	0.0001	0.0576
	(0.0009)	(0.0007)	(0.0011)	(0.0008)	(0.0014)	(0.0014)
Clothing expenditures	0.0134	0.0475	0.0127	0.0475	0.0071	0.0512
	(0.0013)	(0.0007)	(0.0021)	(0.0010)	(0.0013)	(0.0005)
Home improvement	0.0067	0.0519	0.0068	0.0513	0.0040	0.0533
	(0.0010)	(0.0006)	(0.0015)	(0.0008)	(0.0011)	(0.0005)
Medical expenditures	0.0071	0.0517	0.0063	0.0517	0.0096	0.0498
	(0.0010)	(0.0006)	(0.0014)	(0.0008)	(0.0015)	(0.0007)
Transportation and utility	0.0074	0.0505	0.0062	0.0508	0.0007	0.0541
	(0.0011)	(0.0006)	(0.0014)	(0.0006)	(0.0009)	(0.0006)
Entertainment and education	0.0085	0.0499	0.0067	0.0505	0.0123	0.0482
	(0.0011)	(0.0006)	(0.0014)	(0.0008)	(0.0019)	(0.0008)

Rent	0.0123	0.0483	0.0119	0.0481	0.0125	0.0488
	(0.0015)	(0.0008)	(0.0025)	(0.0013)	(0.0019)	(0.0010)
Misc.	0.0081	0.0513	0.0079	0.0508	0.0045	0.0531
	(0.0009)	(0.0005)	(0.0015)	(0.0008)	(0.0011)	(0.0006)
Intermediate goods (food)	0.0504	0.0397	0.0524	0.0440	0.0560	0.0399
	(0.0054)	(0.0024)	(0.0084)	(0.0064)	(0.0078)	(0.0042)
ψ	0.227	1.192	0.231	1.176	0.321	1.119
	(0.035)	(0.010)	(0.090)	(0.014)	(0.051)	(0.013)
Observations	29,023		29,023		29,023	

Notes: Standard errors in parentheses. The Pareto weight(bargaining), home production elasticity, and preference coefficients of 8 final goods and 1 intermediate good are computed through the Delta method with the sample means. The coefficient of leisure is one minus the sum of the coefficients of home production and consumptions. F-test is the joint significance test based on the joint zero coefficient assumption of husband's and wife's *hukou* types. The preference coefficients maintain four-digit precision, as they are derived from functions calculated using Table A3 and possess relatively small magnitudes.

Table 5: Structural estimation II: *hukou* obtention, preferences and bargaining power

	Hukou obtention and household *hukou* types					
	(1)		(2)		(3)	
Pareto weight (bargaining power)						
μ (sample average)	0.350		0.342		0.348	
	(0.158)		(0.172)		(0.156)	
Pareto weight parameters						
Wife brought in *hukou*	0.305					
	(0.027)					
Group 1			0.580			
(wife brought in *hukou*)			(0.264)			
Group 2			0.302			
(wife didn't bring in *hukou* & she has local urban *hukou*)			(0.352)			
Group A					0.583	
(wife brought in *hukou*)					(0.290)	
Group B					0.273	
(wife didn't bring in *hukou* & she has local urban *hukou* and he doesn't)					(0.340)	
Group C					0.223	
(wife didn't bring in *hukou* & she and he both have local urban *hukou*)					(0.270)	
Group E					-0.099	
(wife didn't bring in *hukou* & he has local urban *hukou* and she doesn't)					(0.653)	
F-test Chi-square					250.570	
F-test P-value					2.2e-16	
Home production						
ρ	0.151		0.075		0.122	
	(0.059)		(0.041)		(0.059)	
Preference						
	Wife	Husband	Wife	Husband	Wife	Husband
Alcohol and tobacco	0.0001	0.0577	0.0001	0.0574	0.0032	0.0556
	(0.0016)	(0.0009)	(0.0013)	(0.0012)	(0.0011)	(0.0008)
Clothing expenditures	0.0127	0.0475	0.0105	0.0485	0.0119	0.0478

	(0.0016)	(0.0009)	(0.0011)	(0.0008))	(0.0016)	(0.0008)
Home improvement	0.0066	0.0516	0.0047	0.0524	0.0054	0.0521
	(0.0016)	(0.0008)	(0.0009)	(0.0007)	(0.0011)	(0.0006)
Medical expenditures	0.0066	0.0516	0.0053	0.0521	0.0062	0.0516
	(0.0015)	(0.0008)	(0.0009)	(0.0008)	(0.0012)	(0.0006)
Transportation and utility	0.0054	0.0513	0.0035	0.0521	0.0049	0.0513
	(0.0016)	(0.0007)	(0.0007)	(0.0006)	(0.0016)	(0.0007)
Entertainment and education	0.0072	0.0504	0.0062	0.0507	0.0067	0.0504
	(0.0018)	(0.0009)	(0.0011)	(0.0008)	(0.0014)	(0.0007)
Rent	0.0132	0.0476	0.0118	0.0482	0.0106	0.0488
	(0.0017)	(0.0021)	(0.0044)	(0.0012)	(0.0023)	(0.0011)
Misc.	0.0086	0.0505	0.0061	0.0517	0.0068	0.0514
	(0.0015)	(0.0007)	(0.0009)	(0.0007)	(0.0013)	(0.0007)
Intermediate goods (food)	0.0484	0.0459	0.0392	0.0435	0.0518	0.0425
	(0.0061)	(0.0039)	(0.0064)	(0.0024)	(0.0071)	(0.0047)
ψ	0.335	1.151	0.229	1.146	0.188	1.179
	(0.048)	(0.018)	(0.055)	(0.011)	(0.073)	(0.009)
Observations	29,023		29,023		29,023	

Notes: Standard errors in parentheses. The Pareto weight(bargaining), home production elasticity, and preference coefficients of 8 final goods and 1 intermediate good are computed through the Delta method with the sample means. Groups are arranged according to the assumed bargaining power ranks of wives within families (A is highest). The baseline group is Group D, where neither spouse has local urban *hukou*. F-test is the joint significance test based on the joint zero coefficient assumption of Group A to D. The coefficient of leisure is one minus the sum of the coefficients of home production and consumptions. The preference coefficients maintain four-digit precision, as they are derived from functions calculated using Table A4 and possess relatively small magnitudes.

Table A1: *Hukou*-related benefits

Hukou benefits	Details and examples of benefits
Work	While it is illegal for employers in China to discriminate against job applicants based on their race, ethnicity, sex, and religion, the national law does not provide protection for employees based on their *hukou* status (as stated in Chapter 2, Article 12 of the Labour Law of the People's Republic of China, 1994). However, government entities and state-owned companies often impose *hukou* requirements during their hiring processes, with the specific requirements varying depending on the level of government. In many cases, a large percentage of job positions are exclusively reserved for individuals who possess a local *hukou* and who have met certain residency requirements. In some cases, exceptions to these requirements can be made under talent programs, which may require applicants to hold certain degrees or qualifications.
Housing	In many major cities, the ability to purchase a house is restricted to individuals who hold a local *hukou*. Two housing projects designed to assist low-income residents—the Economically Affordable Housing Project (for purchase) and the Low-Rent Housing Project (for rent)—also require applicants to have held a local *hukou* for a specified period of time.
Education	Enrollment in most public preschools, primary schools, and high schools is typically restricted to students who hold a *hukou* located within the school's district. As a result, even if a child has a *hukou* within the same city, they may not be permitted to attend a school located in a different district. The college admission process in China is based on a provincial level, with each college reserving a higher quota for local students. Consequently, *hukou* status in cities and provinces with more prestigious colleges, which are typically located in more developed regions such as Beijing and Shanghai, is more highly valued.
Social welfare	The five different types of employment-based insurance, which include Endowment Insurance, Maternity Insurance, Medical Insurance, Employment Injury Insurance, and Unemployment Insurance, are not directly linked to an individual's *hukou* status. However, individuals do have the option to make insurance payments to the city where they work or to their original hometown. It is important to note that the Endowment Insurance program has a special requirement for individuals without local *hukou*. Specifically, these individuals must have made consecutive payments for at least ten years in order to be eligible to receive pension benefits.
Vehicle	Major large cities (i.e. Beijing, Shanghai, Shenzhen, Guangzhou , etc.) utilize lottery systems for vehicle registration plates, with participation restricted to residents who hold local *hukou* or other qualified individuals with a sufficient history of residency and social insurance payments.

The summary originates from the "Household Registration Reform and Immigration Research Project," conducted by the China Public and Behavioral Studies in collaboration with the Research Institute of Economics and Management at Southwestern University of Finance and Economics. This platform systematically compiles and condenses a comprehensive array of hukou-related policies enacted in various Chinese provinces since the inception of the People's Republic. Researchers interested in accessing these valuable documents can make applications through the Survey and Research Center for China Household Finance.

On-line Appendix (not for publication)

A.1. The estimating equations

This part gives the full details of the estimation of the structural model.

Final goods and intermediate good:

The first-order conditions with respect to the optimal choices of household consumption of final goods and intermediate good purchase $\{\boldsymbol{c}_t^F, g_t^F\}$ for Equation (11) are:

$$\mu_t \frac{\partial U_t^W}{\partial \boldsymbol{c}_t^F} + (1-\mu_t)\frac{\partial U_t^H}{\partial \boldsymbol{c}_t^F} + \mathbf{1}'\lambda_t = \mathbf{0} \tag{A1}$$

$$\mu_t\left(\frac{\partial U_t^W}{\partial q_t^F}\frac{\partial\, q_t^F}{\partial g_t^F}\right) + (1-\mu_t)\left(\frac{\partial U_t^H}{\partial q_t^F}\frac{\partial q_t^F}{\partial g_t^F}\right) + \lambda_t = 0 \tag{A2}$$

In the next step, the explicit forms of utility functions of individuals from Equation (9) and the home production function from Equation (10) are taken to substitute into the expressions[10]:

After the operation, we can obtain the explicit forms for the consumption vector of final goods $\boldsymbol{c}_t^F$:

$$\mu_t\big(A_t^W\big)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \cdot \boldsymbol{\tau}_{1,t}^W \cdot (diag(\boldsymbol{c}_t^F))^{\psi^W-1} + (1-\mu_t)\big(A_t^H\big)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \cdot \boldsymbol{\tau}_{1,t}^H \cdot (diag(\boldsymbol{c}_t^F))^{\psi^H-1} + \mathbf{1}'\lambda_t = \mathbf{0} \tag{A3}$$

where $A_t^j = \boldsymbol{\tau}_{1,t}^j(\boldsymbol{c}_t^F)^{\psi^j} + \tau_2^j(q_t^F)^{\psi^j} + \tau_3^j(\ell_t^j)^{\psi^j}$.

and the consumption vector of the intermediate good g_t^F:

$$(\ell_t^W)^{\rho}(1-\rho)(g_t^F)^{-\rho}\big[\mu_t\big(A_t^W\big)^{\frac{1-\sigma^W-\psi^W}{\psi^W}}\tau_2^W(q_t^F)^{(\psi^W-1)} + (1-\mu_t)\big(A_t^H\big)^{\frac{1-\sigma^H-\psi^H}{\psi^H}}\tau_2^H(q_t^F)^{(\psi^H-1)}\big] + \lambda_t = 0 \tag{A4}$$

Leisure:

Similarly, the first-order conditions with respect to the optimal choices of the leisure time of wife and husband $\{\ell_t^W, \ell_t^H\}$ for Equation (11) are:

$$\mu_t\left(\frac{\partial U_t^W}{\partial \ell_t^W} + \frac{\partial U_t^W}{\partial q_t^F}\frac{\partial q_t^F}{\partial \ell_t^W}\right) + \lambda_t w_t^W = 0 \tag{A5}$$

$$(1-\mu_t)\frac{\partial U_t^H}{\partial \ell_t^H} + \lambda_t w_t^H = 0 \tag{A6}$$

[10] diag() is the operation to convert a vector into a square matrix with the vector as the value of the diagonal. The detailed operation is $diag(x) = \sum_1^m e_i' x e_i e_i'$, where e_i is the i-th basis vector of $\mathbb{R}^m$.

Taking the explicit forms of the utility function and home production function to the equations above, we can determine that the leisure time of wife ℓ_t^W is:

$$\mu_t \left(A_t^W\right)^{\frac{1-\sigma^W-\psi^W}{\psi^W}} \left[\tau_2^W (q_t^F)^{\psi^W-1} \rho (\ell_t^W)^{\rho-1} (g_t^F)^{1-\rho} + \tau_3^W (\ell_t^W)^{\psi^W-1}\right] + \lambda_t w_t^W = 0 \tag{A7}$$

and the leisure time of husband ℓ_t^H is:

$$(1-\mu_t)\left(A_t^H\right)^{\frac{1-\sigma^H-\psi^H}{\psi^H}} \tau_3^H (\ell_t^H)^{\psi^H-1} + \lambda_t w_t^H = 0 \tag{A8}$$

Equations (A3), (A4), (A7), and (A8) are all in the form where the right-hand side equals 0, which allows us to easily construct orthogonality conditions by replacing the right-hand sides with error terms. Thus, we have 8 errors $e_1 - e_8$ for Equation (A3), one error for every Equation (A4), (A7), and (A8): $e_9 - e_{11}$.

A.2. Empirical appendix

A.2.1. Reduced-form evidence on clothing expenditure

We supplement the reduced-form evidence with evidence on clothing spending, with subcategories such as men's, women's, and children's clothing.[11] Table A2 shows the proportions of clothing expenditure allocated to men's, women's, and children's clothing (if the family has children).

Attanasio & Lechene (2002) and Doepke & Tertilt (2011) who find that an aid program giving women more power increases spending on men's, women's and children's clothing, we find that shifts between men and women's clothing. A wife bringing in better *hukou* significantly increases spending on women's clothing, reduces spending on men's clothing, and has statistically significant but trivial negative effects on spending on children's clothing. Using the more detailed *hukou* categories, reinforces the results using the binary category.

A.2.2. Additional detail from structural estimation

Table A3 shows the constant terms (ν_0), coefficients on age (ν_1), and number of children (ν_2) from the GMM estimation results reported in Table 4 while Table A4 does the same for Table 5.

[11] Other subcategories include textiles and accessories, which we do not consider here.

Table A2: Reduced-form evidence II: *hukou* and spending on clothing

	Member's to the total spending on clothing					
Variable:	Wives' clothing		Husbands' clothing		Children' clothing	
Wife brought in*hukou*	0.027		-0.016		-0.004	
	(0.003)		(0.003)		(0.001)	
Group A		0.057		-0.040		-0.009
(wife brought in*hukou*)		(0.011)		(0.010)		(0.006)
Group B		0.046		-0.032		0.010
(wife didn't bring in*hukou* & she has local urban*hukou* and he doesn't)		(0.026)		(0.024)		(0.016)
Group C		0.031		-0.025		-0.005
(wife didn't bring in*hukou* & she and he both have local urban*hukou*)		(0.011)		(0.010)		(0.006)
Group D		0.002		-0.008		-0.002
(wife didn't bring in*hukou* & he has local urban*hukou* and she doesn't)		(0.016)		(0.015)		(0.008)
Number of children	-0.019	-0.019	-0.007	-0.007	0.022	0.022
	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)
Wife and husband age groups	×	×	×	×	×	×
Time fixed effects	×	×	×	×	×	×
Province fixed effects	×	×	×	×	×	×
Observations	28,799	28,799	28,799	28,799	24,834	24,834
R2	0.016	0.017	0.031	0.031	0.224	0.225

Note: Standard errors in brackets and errors are clustered at the household level. The spending is monthly based on the currency of yuan, and the values are log linearized. Group A, B, C, and D are arranged according to the assumed bargaining power ranks of wives within families. The baseline group is Group E.

Table A3: Details of parameter estimates to the structural estimation I

		Hukou types and *guanxi* (years since settling)					
		I		II		III	
Home production							
Number of children		-0.587		-0.400		-0.441	
		(0.229)		(0.142)		(0.226)	
Preference							
		Wife	Husband	Wife	Husband	Wife	Husband
Alcohol and tobacco	ν_0	-0.098	2.069	-0.089	2.357	0.439	2.024
		(3.949)	(1.074)	(66.945)	(1.583)	(80.890)	(1.717)
	ν_1	-1.497	-1.149	-2.374	-1.215	-2.509	-1.128
		(1.034)	(0.288)	(18.666)	(0.425)	(23.870)	(0.459)
Clothing expenditures	ν_0	-1.351	1.630	-1.276	1.861	-1.053	1.760
		(2.524)	(1.203)	(3.938)	(1.512)	(2.959)	(1.702)
	ν_1	-1.106	-1.079	-1.126	-1.138	-1.239	-1.090
		(0.659)	(0.322)	(1.037)	(0.408)	(0.785)	(0.452)
	ν_2	2.080	-	1.980	-	1.372	-
		(0.175)	-	(0.300)	-	(0.252)	-
Home improvement	ν_0	0.432	1.901	-0.282	2.142	-0.590	1.931
		(2.400)	(1.060)	(3.136)	(1.526)	(3.433)	(1.682)
	ν_1	-1.419	-1.128	-1.225	-1.192	-1.286	-1.124
		(0.616)	(0.285)	(0.820)	(0.410)	(0.902)	(0.447)
Medical expenditures	ν_0	-1.103	1.995	-0.712	2.150	-0.725	1.889
		(2.432)	(1.087)	(3.441)	(1.570)	(2.531)	(1.777)
	ν_1	-0.992	-1.154	-1.131	-1.192	-1.017	-1.131
		(0.624)	(0.292)	(0.901)	(0.422)	(0.665)	(0.472)
Transportation and utility	ν_0	-1.086	2.003	-2.295	2.262	-1.788	1.978
		(3.876)	(1.026)	(7.761)	(1.421)	(23.305)	(1.681)
	ν_1	-0.988	-1.162	-0.713	-1.226	-1.423	-1.133
		(1.026)	(0.276)	(2.058)	(0.382)	(6.152)	(0.447)

Entertainment and education	ν_0	-1.654	1.843	-1.769	2.035	-2.115	1.881
		(3.197)	(1.101)	(4.895)	(1.600)	(2.262)	(1.714)
	ν_1	-0.930	-1.123	-0.943	-1.168	-0.721	-1.138
		(0.819)	(0.295)	(1.275)	(0.430)	(0.613)	(0.455)
	ν_2	0.774	-	0.662	-	0.845	-
		(0.088)	-	(0.156)	-	(0.121)	-
Rent	ν_0	1.774	1.620	1.782	1.811	1.815	1.463
		(0.995)	(1.157)	(2.309)	(1.540)	(1.619)	(1.775)
	ν_1	-1.616	-1.072	-1.629	-1.121	-1.625	-1.024
		(0.277)	(0.311)	(0.598)	(0.416)	(0.454)	(0.473)
Misc.	ν_0	1.129	1.783	2.292	1.834	2.360	1.758
		(1.340)	(1.165)	(2.353)	(1.519)	(4.719)	(1.565)
	ν_1	-1.556	-1.100	-1.872	-1.113	-2.041	-1.080
		(0.358)	(0.312)	(0.603)	(0.409)	(1.300)	(0.417)
Intermediate goods (food)	ν_0	0.743	1.075	0.798	1.475	0.166	1.633
		(0.713)	(1.619)	(1.012)	(2.189)	(1.545)	(1.972)
	ν_1	-0.963	-0.980	-0.969	-1.056	-0.784	-1.122
		(0.206)	(0.435)	(0.293)	(0.601)	(0.416)	(0.508)
Observations		29,023		29,023		29,023	

Note: This table provides the detailed parameters used to estimate the average weights of home production and different consumption categories in the utility functions for Table 4. ν_1 is the parameter for age. ν_2 in the categories of clothing expenditures and entertainment and education is the parameter for the number of children.

Table A4: Details of parameter estimates to the structural estimation II

		Hukou obtention and household *hukou* types					
		I		II		III	
Home production							
Number of children		-0.298		-0.504		-0.518	
		(0.097)		(0.243)		(0.212)	
Preference							
		Wife	Husband	Wife	Husband	Wife	Husband
Alcohol and tobacco	ν_0	-0.085	2.550	0.283	2.550	0.488	2.512
		(116.683)	(1.344)	(79.146)	(1.746)	(3.902)	(1.421)
	ν_1	-2.468	-1.268	-2.532	-1.268	-1.633	-1.269
		(33.865)	(0.360)	(22.565)	(0.467)	(1.062)	(0.381)
Clothing expenditures	ν_0	-1.044	1.947	-1.276	2.065	-2.437	2.369
		(2.535)	(1.430)	(3.180)	(1.806)	(5.243)	(1.535)
	ν_1	-1.246	-1.160	-1.279	-1.185	-0.889	-1.271
		(0.644)	(0.383)	(0.826)	(0.483)	(1.403)	(0.410)
	ν_2	2.321	-	2.550	-	2.303	-
		(0.251)	-	(0.190)	-	(0.283)	-
Home improvement	ν_0	-0.188	2.302	0.395	2.353	-0.012	2.487
		(3.668)	(1.285)	(4.714)	(1.646)	(2.941)	(1.393)
	ν_1	-1.260	-1.232	-1.512	-1.240	-1.359	-1.280
		(0.980)	(0.344)	(1.249)	(0.441)	(0.788)	(0.374)
Medical expenditures	ν_0	-0.603	2.307	-0.542	2.373	-1.237	2.548
		(3.927)	(1.287)	(4.830)	(1.639)	(2.670)	(1.413)
	ν_1	-1.151	-1.233	-1.232	-1.247	-0.996	-1.298
		(1.037)	(0.345)	(1.270)	(0.440)	(0.707)	(0.379)
Transportation and utility	ν_0	-1.619	2.392	-1.681	2.447	-1.446	2.550
		(7.747)	(1.260)	(14.713)	(1.625)	(11.849)	(1.453)
	ν_1	-0.932	-1.257	-1.039	-1.267	-1.003	-1.300
		(2.076)	(0.337)	(3.929)	(0.435)	(3.225)	(0.390)

Entertainment and education	ν_0	-1.481	2.160	-2.480	2.287	-0.582	2.276
		(6.159)	(1.419)	(10.097)	(1.786)	(4.810)	(1.443)
	ν_1	-1.111	-1.201	-0.921	-1.231	-1.291	-1.232
		(1.582)	(0.378)	(2.690)	(0.477)	(1.216)	(0.386)
	ν_2	1.303	-	1.498	-	0.825	-
		(0.294)	-	(0.248)	-	(0.143)	-
Rent	ν_0	2.225	1.840	1.762	2.024	2.131	2.170
		(1.338)	(1.425)	(1.201)	(1.793)	(1.704)	(1.413)
	ν_1	-1.720	-1.131	-1.631	-1.175	-1.753	-1.213
		(0.362)	(0.381)	(0.329)	(0.481)	(0.462)	(0.380)
Misc.	ν_0	1.701	2.051	1.872	2.198	1.041	2.356
		(1.966)	(1.416)	(1.914)	(1.747)	(1.937)	(1.413)
	ν_1	-1.692	-1.171	-1.836	-1.203	-1.579	-1.249
		(0.541)	(0.379)	(0.508)	(0.468)	(0.483)	(0.379)
Intermediate goods (food)	ν_0	0.645	1.877	0.067	2.062	0.401	2.046
		(1.156)	(1.662)	(1.203)	(1.994)	(1.029)	(1.880)
	ν_1	-0.950	-1.150	-0.858	-1.212	-0.867	-1.217
		(0.322)	(0.441)	(0.342)	(0.535)	(0.289)	(0.504)
Observations		29,023		29,023		29,023	

Note: This table provides the detailed parameters used to estimate the average weights of home production and different consumption categories in the utility functions for Table 5. ν_1 is the parameter for age. ν_2 in the categories of clothing expenditures and entertainment and education is the parameter for the number of children.