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Gendered housework under China's privatization: the evolving role of parents

Abstract

In China's multigenerational society, parents fulfill essential family functions including housework – a critical site of gender inequality with important consequences. Combining data from the China Health and Nutrition Survey (n = 14,096 person-years, 1997–2015) with a province-level privatization index, we find that co-residing with parents was associated with less housework time, whereas co-residing with sick parents was associated with more housework time. These associations were stronger for women than men. Our results highlight the increasingly important role of parents to help their adult daughters or daughters-in-law cope with housework demands as China's economy was privatized.

Keywords: gendered housework, parental co-residence, parents' health, intergenerational time transfer, privatization, China

Introduction

Over the past 50 years, scholars have focused on housework as a central marker of gender progress (Altintas and Sullivan 2016). Although men have increased and women decreased their housework time, a gender gap remains with women spending more time completing domestic tasks than men (Sayer 2016). These traditional gendered norms still underpin household allocations of domestic work despite massive gains in attitudinal support for gender equality (Pedulla and Thebaud 2015). Moreover, time spent completing housework is reciprocally related to work time and personal earnings, meaning that housework has adverse economic consequences (Sayer 2016).

These broad patterns have been well established within the U.S. and across countries through comparative analysis (Hook 2006; Ruppner 2010). China is no exception – despite many radical changes since the 1978 economic reforms, the gendered division of housework persists with women still shouldering the lion’s share (Yu and Xie 2011; Z. Zhang 2017). Notably, a substantial body of literature confirms that the dynamics between gender and housework function similarly in China (Kan and He 2018; Luo and Chui 2019).

Yet, China is distinct from other leading global nations in the importance of multigenerational ties, which are increasingly important due to population aging (Bengtson 2001; Silverstein and Bengtson 1997). Grandparents fulfill many family functions in China, where parents’ co-residence with adult children is high. According to the China Health and Nutrition Survey (CHNS), from 1991 to 2004, 45% of grandparents co-resided with children aged 0–6 (F. Chen, Liu, and Mair 2011). The extent of co-residence is striking compared with other countries such as the United States, where only 4.0% of families are multigenerational (U.S. Census 2011). How these distinct family types allocate housework is theoretically and substantively important especially given China’s dramatic shifts towards economic and domestic privatization.

Despite previous work analyzing the association of parental co-residence with childcare or employment (Feng and Zhang 2018; Maurer-Fazio et al. 2011; Shen, Yan, and Zeng 2016), few studies have linked parental co-residence to the gendered division of housework (see Shen, Yan, and Zeng 2016 and Hu 2018 for exceptions). Further, to our knowledge, no study to date has linked parents' health to their adult children's housework in the Chinese context. Existing literature shows parents' health is linked to aged care (Chen et al. 2018), which is inextricably linked to housework. This study directly establishes these empirical links. Finally, the gendered division of housework is inevitably influenced by national context (Hook 2006; Ruppner 2010), with China's transition to the privatization of employment and domestic work likely increasing the role of parents in supporting adult children's gendered division of housework (Cook and Dong 2011).

To fill these gaps, we pair data from the CHNS to measures of privatization of the local economy over an 18-year period (1997 to 2015) and apply multilevel models to show parental co-residence is associated with a reduction in time spent on housework. When parents became sick, however, their adult children's time in domestic work increased. Both associations were stronger for women, underscoring that these patterns are gendered. Our work shows China's gendered division of housework is shaped by the microsocial dynamics of families and the macro changes of society, extending theorization of the increasing complexity of family life in modern societies (Bengtson 2001). As China privatized employment and domestic responsibilities, parental co-residence became an increasingly important resource for wives to meet their domestic demands but this resource becomes a demand when co-residential parents fall ill.

Background

Parents and Adult Children's Housework in China's Multigenerational Society

While Western literature on the gendered division of housework focuses mainly on couples, this nexus is insufficient for the Chinese context due to the high prevalence of intergenerational co-residence. In China, married couples are likely to live with their parents, especially those of the husband (Grujters and Ermisch 2019). This co-residential pattern, referred to as patrilocal, fosters lifelong bonds between parents and sons while simultaneously placing wives at a power disadvantage (Whyte 2005).

Intra-household divisions of housework are governed by patriarchal hierarchy (e.g., Grujters and Ermisch 2019; Hu 2018; Santos and Harrell 2016), meaning that in addition to the gender hierarchy that obliges women to be the main housekeepers, there is also a top-down generational hierarchy. Specifically, parents (in particular mothers) are likely to offload housework down to their children (mainly daughters). Changing family demands challenge these traditional patriarchal hierarchies. Recent scholarship documents the rise in “child-centered” co-residence, where parents help their adult children with domestic work (Q. F. Zhang 2004). In explaining the contradiction, some argue that adherence to traditional customs has been weakened by the individualization process and women's economic empowerment (Whyte 2005). Others point to a general cultural shift toward more egalitarian parent-child relationships (Yan 2016).

Two profound demographic drivers have reinforced the modern parent-child relationship: (1) the early retirement policy and (2) China's dramatic demographic transition through its one-child policy (Shen, Yan, and Zeng 2016). China's mean retirement age is 60 years for men and 50 or 55 years for women. Simply, women retire at a very young age in China, meaning they are more likely to be physically healthy to support their children in domestic work. Further, China's birth control policies since 1970 and rapid economic growth

have both contributed to a particularly sharp decline in fertility. At the national level, the total fertility rate dropped from close to six in 1970 to below two in 1990 and has remained low since then (Whyte, Feng, and Cai 2015). This means that many adult children are the only children of their parents, and if their parents are able or willing to help, they are highly likely to receive it. Thus, China's unique demographic characteristics over this time – early retirement combined with declining fertility – provide a solid foundation for the adult population to receive parental housework support.

Existing empirical research focuses on the relationship between parental co-residence and either childcare or employment. Feng and Zhang (2018) illustrated that retirement resulted in a statistically significant increase in the provision of grandchild care. Employing Chinese population census data, Maurer-Fazio et al. (2011) show parental co-residence increases women's likelihood of participating in paid work. According to Shen, Yan, and Zeng (2016), co-residing with their parents can significantly increase women's work time by 20–26 hours per week, in part because parents share the burden of housework, thus freeing up time for women's employment. Existing literature underscores the importance of parental co-residence to reducing women's housework. Here, we explicitly establish these links and situate them net of parental health and economic privatization.

Does Parent's Health Matter?

While the capacity of parents to help their adult children with housework should be contingent on parents' health, this is not always taken into serious consideration; frequently due to data limitations (e.g., Shen et al. 2016). However, the omission is problematic given that aging parents are expected to be cared for by the family, not the state. The tradition of filial piety and structural and practical constraints maintain the family as the central caregiver (Logan, Bian, and Bian 1998; Zhan and Montgomery 2003; Q. F. Zhang 2004), which is further reinforced by laws stipulating family members have primary responsibility for the

care of elderly parents. Although the state provides some institution-based care, these provisions are minimal and usually the last resort for the derelict (X. Chen et al. 2018). Thus, most aged care is performed within the family by either a spouse or adult children (X. Chen et al. 2018). Further, the literature suggests that sons tend to provide financial support, but daughters and daughters-in-law are more likely to provide instrumental support to and perform household chores for their parents (Cong and Silverstein 2008; J. Chen and Jordan 2018; Zhan and Montgomery 2003).

While the empirical literature has focused mainly on the provision of aged care, there is reason to believe that co-residence more broadly shifts these roles with important consequences when the parent is sick. Here, we focus on one – housework time – to see if adult children report spending more time on housework when an ill parent is present and whether these relationships are gendered. We expect the co-residence of sick parents to activate traditional caregiving gender norms of care and thus increase adult women’s housework time.

We benchmark parents’ domestic contributions against two of the main housework theories – (1) time availability, and (2) “doing gender” – in the Chinese context.¹ Time availability is rooted in a rational choice logic that posits time is finite; when one spends time in one domain, one reduces the time available in another (Becker 1981; Presser 1994). “Doing-gender” maintains that domestic work is one mechanism through which people “do gender” or enact traditional gender roles within the family (Berk 1985; West and Zimmerman 1987). Along this theoretical tradition, women do, and men avoid housework to exhibit traditional masculine and feminine traits (Berk 1985). Although established through western epistemologies, these theories have been supported in the Chinese context (see Yu, 2014; Kan and He 2018). Yet, co-residence with parents, especially when ill, is critical to understanding housework amongst Chinese couples. We expect parents, when healthy, to

assume more household work, a crucial mechanism of time creation not typically theorized in the “time availability” perspective. Importantly, when parents fall ill, we expect their relationship to housework to reverse, increasing housework demands on adult children and reducing the time available for other activities (e.g., paid employment). The doing-gender perspective underscores housework as gendered and thus, we expect co-residence with healthy parents to be most beneficial and ill parents detrimental to women.

We present these theoretical predictions in formal hypotheses below:

Intergenerational Time Transfer Hypotheses

H1: Intergenerational co-residence with parents will allow adult children (both men and women) to spend less time on housework.

H2: Reductions in time spent on housework will be more significant for daughters than for sons.

Sick Parents Hypotheses

H3: Those people who co-reside with sick parents will spend more time on housework.

H4: Compared with men, women will report a more significant increase in time spent on housework when an unhealthy parent is present.

The Rising Importance of Parents: Implications of Privatization for Housework Time

As China’s economy moved towards increased privatization, we expect parents to play a more critical role in helping adult children’s housework. Privatization concentrates the responsibilities of work and family on the individual and within the home. Here, privatization refers to both the privatization of employment (e.g., Lardy 2014) and the privatization of domestic labor (e.g., Yan 2010), which are inextricably interrelated. As more families are being asked to “go-it-alone,” the pressures of simultaneously balancing work and housework demands may intensify, and, as a result, parents may become a more integral resource for

carrying the burden of housework so adult children can invest more heavily in employment. The evolution of this process is explained as follows.

During the Mao era (1949–1976), an integral part of the national agenda included gender equality, which was most profoundly reflected in employment. The state encouraged women to study, marry, and have jobs and babies, and the state provided the means to help women manage these competing demands. Most impressively, the state successfully mobilized more than 90% of urban women into the paid workforce (Maurer-Fazio et al. 2011). The majority of these jobs were directly provided by the state, which entitled their employees to lifetime employment and a wide range of social services and benefits, including maternity leave, childcare, health care, housing, and retirement pensions (Cook and Dong 2011). These welfare benefits, although not entirely generous given the low level of economic development at the time, provided strong job security and freed women from some household work as the state assumed some responsibility for the care of children and the aging.

Since the 1978 economic reforms, China's employment environment underwent a significant transformation. The private sector has gradually replaced the public sector as the major employer and growth and profit-making have become the focus of businesses. As government regulation eased, employers became less willing to hire women and accommodate maternity and parental leave, and the state's welfare provisions eroded, which further disadvantaged women in the job market (UNICEF 1999). Since the mid-1990s, state-owned enterprises have become more reluctant to provide on-site nursing facilities, subsidized daycare programs, and paid maternity leave (Cook and Dong 2011). Essentially, the retreat of state-provided care pushed the domestic burden back onto individual families which disproportionately fell to women at the expense of their employment (Ji et al. 2017; Metcalfe and Afanassieva 2005; UNICEF 1999; World Bank 2002).

Qi and Dong (2016) showed that unpaid care work directly interfered with women's paid work, contributing 27 to 28% toward the gender earnings gap. Recent evidence suggests that women job seekers, particularly childless women of childbearing age, are less desirable candidates due to the potential loss associated with childcare leave (Zhou 2019). In these ways, removing the state's protections has opened women up to inequality in the home and discrimination in employment.

This leads to our final set of hypotheses:

Privatization Hypotheses

H5: As the Chinese economy was privatized, co-residing parents became an increasingly important resource for adult children to reduce time spent on housework.

H6: The effect is more significant for women than that for men.

Materials and Methods

Data

To assess our hypotheses, we apply data from the CHNS. The first round of the CHNS was collected in 1989. Since then, ten rounds of data have been collected (in 1989, 1991, 1993, 1997, 2000, 2004, 2006, 2009, 2011 and 2015). Although the survey was not designed to be representative of China, a multistage, random cluster process was used to draw the samples surveyed in each of the selected provinces, which vary substantially in geography, economic development, public resources, and health indicators (Popkin et al. 2010). In this way, the CHNS provides a diverse sampling of the Chinese population across a wide-ranging set of socioeconomic factors.

Several design features of CHNS significantly shaped our data selection. The CHNS only started to ask questions related to parents' health in 1991. Therefore, we were unable to include data for wave 1989. Data for 1991 and 1993 were also excluded because there was a

major change in the definition and questions of housework since 1997 (i.e., cleaning was not considered housework before 1997). Notably, the CHNS only asks *women under the age of 52* who are married, widowed, or divorced to answer questions on intergenerational linkages to parents, including where a mother/father/mother-in-law/father-in-law lives and their health status. To obtain information relating to men respondents and conduct gender comparisons, we linked the main respondent to their spouse to identify co-residence with parents and parents' health and assigned the parental information to the surveyed women's spouses (if they were also interviewed). There is only one same-sex couple in the dataset, which we excluded. Due to question-wording, our sample is limited to those married women under age 52 and their men spouses.

After a preliminary round of selection (wave \geq 1997; married people), we obtained a sample of 49,912. Among the 24,398 women respondents, 14,776 provided information on parental co-residence and their parent's health. The main reason for not answering the questions was being over 52 years old ($n = 9,515$), the age requirement set by CHNS.

We excluded 3,374 observations from those who did not report their time spent on housework and another 5,201 observations from those who did not report their paid work time.ⁱⁱ Finally, we excluded 2,572 observations due to missing values on other individual-level variables. After applying all the selection criteria, we obtained a final analytical sample of 14,096 (8,647 women respondents and 5,449 of their men spouses). These observations are nested in 68 province-year groups (see Table 1).

Individual-Level Variables

Dependent Variable: Housework Time

The dependent variable for this study is the respondent's time spent on housework. In the survey, respondents were asked whether they "(1) bought food for your household, (2) prepared and cooked food for your household, (3) washed and ironed clothes,ⁱⁱⁱ and (4)

cleaned the house during the past week.” If yes, the respondents were then asked how much time they spent per day on each item, on average (minutes). We added the four items together and obtained the total time respondents spent on housework. Total housework time was top-coded and capped at 900 minutes per day, to minimize the influence of outlier cases.

Key Independent Variables

Respondents were asked where their mother/father/mother-in-law/father-in-law lives. Answers included (1) same household, (2) next door or adjacent to household, (3) same neighborhood/village, (4) outside neighborhood, but same city or county, (5) other city or county. Using answers to these questions, we constructed a dummy variable of co-residence with a parent (value 1 = respondent lives with any one or more of their parents/in-laws, or next door or adjacent to household; value 0 = all other options).

The CHNS also asked respondents whether their mother/father/mother-in-law/father-in-law needs other people’s help in daily life and shopping which we constructed into a dummy of having a sick parent (value 1= yes). The value 0 was reserved for those with all parents being healthy. We interacted our co-residence and presence of sick parents to measure respondents who report co-residing with and having a sick parent (value = 1).

Individual-Level Controls

Consistent with housework theories, we included work time (measured in minutes/day; top-coded and capped at 900 minutes/day) to capture dimensions of time availability and a relative income measure by dividing one’s income by one’s spouse’s income – into several dummies: earning less than half (of their spouse’s income), earning similar level of salary with their spouse (the reference group), and earning more than double (of their spouse’s income) – to measure our respondent’s relative resources (see footnote 3). We also generated another dummy variable for missing income to maintain a relatively large

number of observations ($n = 4,269$) as imputing violates the nested structure of the multilevel model (Grund, Ludtke, and Robitzsch 2018).

In addition to the parent-related variables, we included two additional variables of household structure. One was the number of children in the household, and the other one was the number of people in the household which are often theorized through time availability and doing-gender perspectives.

We included a number of sociodemographic controls in our models. We measured age through a series of dummy variables: 18 to 27, 28 to 37 (the reference group), 38 to 47, and 48 and above. We also included the urban/rural residence, hukou, and ethnicity of respondents. For both urban/rural residence and hukou variables, we assigned the value 1 for urban (0 for rural). For the ethnicity variable, 1 represents a minority, while 0 represents Han ethnicity. To control for education, we included three dummies: (1) compulsory education (junior middle school) or below (the reference group); (2) high school or middle-level vocational school; and (3) college or above. Finally, we also controlled the respondent's household income. The CHNS provides an inflated version (to 2015 price level) of the variable, which we used to compare income across years. We divided annual household income into different categories: below 15,000 yuan, between 15,000 and 50,000 yuan (the reference group), and above 50,000 yuan.

Privatization Index

At the province level, we constructed a privatization index by dividing the number of people working in urban private enterprises (including individual businesses)^{iv} by the number of all urban workers and then multiplying by 100 (China Statistical Yearbook series). We collected the data of the surveyed provinces in different waves (yearbooks 1998, 2001, 2005, 2006, 2007, 2010, 2012, and 2016) to link individuals to the level of privatization in their province at the survey time. We used the ratio of private employment in urban areas. Ideally,

there should be a different way to measure privatization in rural areas. However, the requisite data – collected across all the CHNS sample provinces for almost 20 years (1997–2015) is not available. Rather, we have relied on what is available from the most reliable source, which has increased data quality at the expense of nuance.

After presenting these main findings, we also consider other contextual measures, including GDP and women’s college attendance and illiteracy (measured separately), to account for confounding measures. A direct measure of the privatization of care/domestic work across provinces over time is not publicly available but the transition to a private economy is mirrored in experiences within the domestic sphere thus capturing some of this nuance (Ji et al. 2017; Metcalfe and Afanassieva 2005; UNICEF 1999; World Bank 2002).

Multilevel Models

We analyzed time spent on housework in multilevel regression models. Following the approach of Hox (2010), our basic models (i.e., Model 1 and Model 2) can be written as:

$$Y_{ij} = \gamma_{00} + \gamma_{10} X_{1ij} + \gamma_{20} X_{2ij} + \gamma_{30} X_{3ij} + \dots + \lambda_t + \gamma_{01} Z_{1j} + u_{0j} + \varepsilon_{ij}$$

where Y_{ij} is the housework time for the i^{th} individual in province-wave j , γ_{00} is the grand mean of housework time, X_{1ij} , X_{2ij} , X_{3ij} ... are the individual-level key independent variables and controls for the i^{th} individual in province-wave j , γ_{10} , γ_{20} , γ_{30} ... are the slopes for the individual-level independent variables, λ_t are the year dummies, Z_{1j} is the privatization index for province-wave j , and γ_{01} is its corresponding slope, u_{0j} is the random effect/deviation from the grand mean of time spent on housework for province-wave j , and ε_{ij} is the error/deviation from the group mean for the i^{th} individual in province-wave j .

Then, we tested for cross-level interactions to explore whether the housework effects of intergenerational linkages to parents are conditioned by the group-level privatization index. In addition to the random intercept, we also included the random slope for the lower-

level component of the interaction term (i.e., co-residence with a parent) because the omission of the random slope would result in severely anti-conservative statistical inference (Heisig and Schaeffer 2019). This model (i.e., Model 3) can be written as:

$$Y_{ij} = \gamma_{00} + \gamma_{10} X_{1ij} + \gamma_{20} X_{2ij} + \gamma_{30} X_{3ij} + \dots + \lambda_t + \gamma_{01} Z_{1j} + \gamma_{11} X_{1ij} Z_{1j} + u_{0j} + u_{1j} X_{1ij} + \varepsilon_{ij}$$

where $X_{1ij} Z_{1j}$ is the cross-level interaction between the individual-level parental co-residence and group-level privatization index, γ_{11} is its corresponding coefficient, and u_{1j} is the random slope.

The privatization index was centered on the grand mean when entered the equations. Each model was estimated separately by gender, and the significance of gender differences was tested by interaction models.

Some observations are observed multiple times, but the panel is unbalanced. This is because, for each wave, CHNS added new communities to replace sites no longer participating. Due to our coverage of a very long time (i.e., 1997–2015), only a small proportion of people are repeatedly covered. Among our analytical sample of 14,096 observations, there are 8,655 unique individuals. Most of them are observed only once. On average, each distinct individual was observed 1.63 times. Given this data limitation, we are unable to treat individuals as a separate level. The potential implications of within-person estimation will be discussed in the section “Additional Analysis.”

Results

Descriptive Statistics

Table 1 shows the values of the privatization index across provinces and years. Overall, privatization has considerably increased between 1997 and 2015, with the mean increasing from 16% to 48% (the bottom row of Table 1). Within each wave, there is a

significant variation in the extent of privatization. In 2015, for example, Chongqing had the highest percentage (64%) of urban workers in the private sector, while the percentage was only 37% in Heilongjiang.

[Table 1 near here]

Table 2 summarizes the descriptive statistics of individual-level variables by gender. The right-most column shows the (two-tailed) t-test results for the gender differences in means. On average, women spent 153 minutes per day on housework, about four times the amount of time men spent on housework. The gender difference was statistically significant at the 1% level.

Close to half of our sample co-resided with a parent, but only 17% reported having a sick parent and even fewer co-resided with a sick parent (5%).

[Table 2 near here]

Determinants of Housework Time

Table 3 tests our main hypotheses. Results of Model 1 show that, consistent with expectations, co-residing with a parent significantly reduced housework time (support for H1) while having a sick parent significantly increased the housework time (support for H3). The absolute values of coefficients for co-residing with a parent and having a sick parent are very similar (Model 1), suggesting that the reduction in time spent on housework when co-residing with a parent can be entirely offset by having a sick parent.

[Table 3 near here]

A significant gender difference exists. The absolute values of coefficients for co-residence and sick parents are significantly larger for women than men (Model 1; support for H2 and H4). When both the co-residence pattern and parent's health status were considered (Model 2), the interaction term was statistically significant only for women. This means sick parents place an unequal burden on the amount of time women spend on housework that is not equally experienced by men (support for H4). These findings are consistent with previous research that suggests that women are more likely to provide instrumental support to and perform household chores for their parents (Cong and Silverstein 2008; J. Chen and Jordan 2018; Zhan and Montgomery 2003).

As predicted by the time availability theory, work time was negatively associated with time spent on housework for both women and men, with a larger effect on women. In support of relative resources, we find women who earn less than half of their spouse's income spend more time in housework than women who make equal to or more than their spouse. For men, income is not significantly associated with housework time indicating it only forms a resource for women. Yet, when wives significantly out-earned their spouses, they tended not to change the amount of time spent on housework, which supports the "doing-gender" perspective. Overall, these results indicate a substantial trade-off between housework and time available for paid work for wives, a finding consistent with theoretical predictions overserved in previous research (Kan and He 2018; Luo and Chui 2019; Yu 2014).

The number of children also significantly increased time spent on housework only for women ($b = 7.96$, $p < .01$ in Model 1; $b = 7.97$, $p < .01$ in Model 2; gender differences significant at the 10% level). Household size is negatively associated with men's and women's housework time with larger effects for women than men. Being younger (between 18 and 27) was associated with significantly less time spent on housework for women but not

for men. There was no significant association between urban or rural residence and time spent on housework, but having an urban hukou significantly increased the housework time for men but not women. For both men and women, there was no significant association between ethnicity and housework time. Completing more education was associated with significantly less housework time for women only. Having a higher household income had little impact on housework time, for both women and men. Again, these results are mostly similar to the results of Dong and An (2015), whose study used the 2008 Time Use Survey and concluded that pre-school-aged children reinforced the gender gap in time allocation, while better education and more income lowered women's housework.

Cross-Level Interactions

We expect housework time to vary by level of privatization. Models 1 and 2 include privatization alone which was not statistically significant, counter to our hypotheses (H5). However, Model 3 shows the privatization index was negative and statistically significant for women who co-reside with parents ($b = -0.37$, $p < .05$; support for H5 and H6). This means that, as the economy was privatized, co-residing with parents played an increasingly important role in reducing women's housework time.

To better interpret these results, the housework time for women and men was predicted across the range of privatization index observed across province-wave groups. We calculated margins from predictions of Model 3, at fixed centered values for minimum and maximum values of privatization index (minimum for Jiangsu in 1997 = -25 and maximum for Chongqing in 2015 = 29; original uncentred values are shown in Table 1). The predicted housework time was then plotted in Figure 1.

[Figure 1 near here]

As Figure 1 shows, as the economy was privatized, co-residing with a parent helped women considerably reduce their time spent on housework. At a low level of privatization, those married women who co-resided with their parents tended to spend the same time on housework compared to those who did not live with their parents. However, as more people moved into the private sector, co-residing with a parent became an essential resource for married women, significantly reducing the amount of time they spent on housework. An equivalent pattern was not obvious for men.

Additional Analysis

In our main analysis, we did not distinguish between patrilocal and matrilocal co-residence. As an additional analysis, we entered each scenario separately. The basic patterns of our main findings remained largely the same. However, the gender difference in matrilocal co-residence and time spent on housework is not statistically significant. We cannot make firm conclusions given the reduction in sample size amongst those who co-reside with the wife's parents (only 7% compared with 37% who live with husbands' parents). This is consistent with the findings of Gruijters and Ermish (2019) that matrilocal residence remains unusual in China.

We performed several additional robustness checks (results not presented due to space limitations but can be provided upon request). First, we completed sensitivity tests for missing values. A significant reduction of sample size was caused by refusals to report time spent on housework and paid work. Little's test showed that the two variables were not missing completely at random. As a sensitivity test, we did the inverse probability weighted complete records analysis. To investigate the missingness mechanism, we created a binary variable that indicates an observation has complete records (i.e., no missing values for any variables included in our models) and then fitted a logistic regression model for this binary

variable, with a series of covariates (relative income, number of children, age, urban/rural residence, hukou, ethnicity, education, and household income). The result indicated that those out-earning their spouses or having missing relative income information, having more children, being under 27 or above 48, residing in urban areas and having an urban hukou, having a college degree or above, or having a household income lower than 15,000 yuan or above 50,000 yuan per year are more likely to have complete records. Using the results of this logistic regression model, we generated a weight variable, which is the reciprocal of the predicted probability of being a complete record. We then used these weights to weigh each observation's contribution and re-ran the models in our main analysis. The results are reasonably similar to those in Table 3, lending further support to our findings.

Second, in our main analysis, we did not account for within-person correlation. We were unable to directly cluster standard errors by individuals because, in our main analysis, observations were nested in province-years instead of individuals. Treating individuals as a separate level was also impossible given the very small number of observations per individual (i.e., 1.63). To better understand the potential impacts of within-person correlation, we conducted two types of additional tests. First, we changed to multilevel models with the generalized least squares estimation (in our main analysis, we performed the maximum likelihood estimation, which is more commonly used and allows the inclusion of random slopes) and clustered standard errors by individuals. Second, we selected only one observation per individual and re-ran all the models in Table 3. The results of both types of additional analyses confirmed the basic pattern of our findings.^v

In our main analysis, we included a privatization measure as the only group-level predictor. We did not include these additional factors in our main analysis because, with a limited number of higher-level groups, it is crucial to be parsimonious in estimating the group equations (Bryan and Jenkins 2015). However, privatization is not the only changing context.

We thus added more contextual factors to account for their potential impacts in additional analysis. We collected (1) per capita GDP (inflated to 2015 price level), (2) women's college attendance relative to men's college attendance, and (3) women's illiteracy relative to men's illiteracy. These measures capture several other major changes alongside China's economic transition, notably economic growth and the landscape of women's education and status by gender. Data for all these three measures were collected from the China Statistical Yearbook series. Similar to the privatization index, these variables were centered on the grand mean. We entered them first individually and separately and then together to re-run the models of Table 3. Again, our substantive results were confirmed: the effect of privatization remained significant when other contextual factors were controlled.

Finally, given the small number of higher-level units, one potential concern is that the results of cross-level interactions may have been driven by outlier province-waves. To test for potential outliers, we excluded each province (12 in total) and then each wave (seven in total) individually and re-ran Model 3 of Table 3. In all these subsamples, we found that the basic pattern of our results was unchanged: that is, the cross-level interaction between privatization and parental co-residence worked in opposite directions for women and men, with the gender difference statistically significant. This suggests that the results shown in Table 3 were not driven by outlier cases.

Conclusion

In this paper, we explored married couples' time spent on housework in China's privatization process. We found that parents played a significant role, with their presence associated with a reduction in the amount of time spent on housework for their adult children, in particular, their daughters or daughters-in-law. However, when they became sick, co-residence with adult children is positively associated with housework time, again with the effect stronger for women. We also found that privatization played a critical role in

explaining couples' housework time. As the economy was privatized, co-residing with parents became an increasingly important resource for married women to reduce the time spent on housework.

The implications of this research are threefold. First, consistent with previous research (Shen, Yan, and Zeng 2016 and Hu 2018), our study shows that Chinese parents play a significant role in helping their adult children with housework. As supported by previous research (F. Chen, Liu, and Mair 2011; Feng and Zhang 2018; Maurer-Fazio et al. 2011; Shen, Yan, and Zeng 2016), parental co-residence likely supported not only women's housework but also their childcare and employment. Importantly, our study situates the finding in China's privatization process and shows that although the retreat of the state itself was gender-neutral, its implications were gendered. As the economy was privatized, both women and men spent more time in employment to meet the increasing work demands. Since women do much more housework, they drew support from their co-residing parents. From this perspective, parents have cushioned some key detrimental impacts for women and in this sense prevented China from a more severe setback in gender inequality – where women would have done all the housework. Our finding also points out that parents have absorbed more housework as the economy is privatized, probably to lend further support for their adult children to survive in the increasingly competitive workplace.

However, such a pattern has disadvantaged some groups of people. Not everyone is able or willing to co-reside with their parent. Those without such support are likely to do more housework, which has potentially adverse implications on their ability to spend time in paid employment. Our study highlights the need to consider parents' health status, identifying the importance of understanding linked lives for the Chinese context. The existing literature tends to focus either on the extra hand provided by parents, portraying them as loving helpers or on the care burden created by aging or sick parents. Our research integrates the two

perspectives and illustrates that co-residence with parents became an increasingly important resource but only when parents were healthy. Co-residence with ill parents increased housework, especially amongst adult women.

Essentially, our finding implies a worrisome trend. While the one-child generation benefited from the support from their relatively young and healthy parents in the past two decades, the picture is likely to flip as their parents age. In the absence of government-provided caregiving support and as more parents of the one-child generation age into needing familial care, the burden is likely to fall onto women leading to greater housework demands. Given that increased housework is associated with exits from employment (Ji et al. 2017; Metcalfe and Afanassieva 2005; UNICEF 1999; World Bank 2002), risk of divorce (Killewald 2016) and poor health outcomes (Ruppanner et al. 2021), the consequences are potentially far-reaching.

This study is not without limitations. The first is the potential bias resulting from the selection of the analytical sample. Given the design of CHNS, we focused on those married women aged under 52 and their men spouses. This reduces the generalizability of the analysis. Despite the longitudinal design of CHNS, the data for our analytical purpose are unbalanced, with most individuals observed only once. We thus treated the data as cross-sectional, which does not allow us to make causal claims. We see that privatization plays an essential role in shifting housework patterns, but how this economic shift influences within-person change remains unclear. Relatedly, we treated between-province and overtime differences as the same. An important reason for this was that the number of waves and the number of provinces were both small and treating them as separate levels is not ideal for multilevel analysis. Also, more nuanced subgroup analyses would strengthen the contributions of this manuscript, allowing us to compare those co-residing with sick parents in urban versus rural areas, with more children in the home and those holding fewer

economic resources. Our findings point to these family arrangements as exacerbating women's housework time but these patterns may be more salient for some groups than others. Data collection, including detailed qualitative interviews, amongst those with different resources would be an important direction for future research.

Further, our estimation of privatization is only one dimension of the significant social change that overtook China during this time. This points to the need for further inquiry into the role of family, gender, and normative shifts that may also structure this major economic upheaval, which includes a more explicit measurement of the privatization of family, care and domestic life. In our additional analysis, we included more contextual factors to control for their potential confounding effects, but they were not treated as the focus of our inquiry. Our research should provide a starting point for subsequent analyses of women's experiences during this transition and data collection on transitions within the home.

Ultimately, the results of our study are clear: married women experience a housework disadvantage relative to married men, and co-residing parents play a critical role in alleviating this burden to facilitate employment, but only if the parents are healthy. Parents become more valuable for married women to cope with housework demands as China privatizes employment and domestic responsibilities. Significantly, as we note above, caregiving demands will likely increase as parents of the one-child generation's health declines and require care. Our study identifies one dimension of inequality that is likely to widen under this transition – the gendered division of housework.

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ⁱ The third main housework theory, the relative resources perspective, posits that couples divide housework through a bargaining process, with those who have more resources (i.e. earnings), doing less housework as an exchange (Pinto and Coltrane 2009). This theory has been supported for the Chinese case. For example, Luo and Chui (2019) demonstrated that a wife's work hours and her relative resources are important predictors of gendered housework gaps.

ⁱⁱ The CHNS asked respondents to indicate whether they are currently employed. Only the employed respondents were asked how many hours they work in a day. We assigned the value 0 for work time if the respondent was not employed.

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- ⁱⁱⁱ In 2015, CHNS split the third item by asking how much time the respondents spent on (3a) washing clothes with washing machine and (3b) washing and ironing clothes by hand. We added the two items together.
- ^{iv} In China, the public/private split is not very clear cut: private enterprises and individual businesses are private, state-owned enterprises are public, but there are many other types of businesses that fall in between (e.g., collectively owned enterprises, etc.) (Lardy 2014). We rely on a narrow definition of private. This underestimates the scale of the private sector. However, since we are primarily interested in changes and adopts a consistent definition across provinces and years, this underestimation is unlikely to pose major problems for our analysis.
- ^v As for within-household/family correlation, since (1) the sample was restricted to those women aged under age 52 and their partners (due to the CHNS design); and (2) we ran separately models for women and men, the great majority of individuals included in our analytical sample were from different households. The 5,001 unique female respondents were from 4,549 unique households while the 3,654 unique male respondents were from 3,430 unique households. In additional analysis, we selected one observation per household and re-ran the models. The substantive results still remained unchanged.