Household Bargaining and Fertility Decisions under China's Two-Child Policy*

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Abstract

This paper studies how the introduction of China's Two-Child Policy affected intrahousehold resource allocation and female bargaining power. Using micro-level data from the China Family Panel Studies (CFPS), I estimate a structural household demand model based on the collective framework developed by Browning et al. (2013). My results indicate that the Two-Child Policy substantially reduced women's resource shares within households from an average of 38% to 25%—a decline of approximately one-third. This deterioration was particularly pronounced among families with first-born daughters, consistent with intensified son-seeking behavior following the policy reform. The policy also weakened the relationship between women's relative income and their bargaining power, suggesting that traditional economic levers of household influence were undermined. Complementary reduced-form evidence reveals significant increases in fertility among previously constrained households and a corresponding rise in women's housework burden. These findings reveal a troubling paradox: fertility liberalization intended to expand reproductive choice may actually worsen gender inequalities within households unless accompanied by targeted complementary policies.

Keywords: Household bargaining, two-child policy, intrahousehold allocation, gender, China, structural model

JEL Codes: D13, J13, J16, O15

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1 Introduction

In January 2016, responding to concerns about low fertility and an aging population, China replaced its decades-long One-Child Policy with the Two-Child Policy, allowing all couples to have two children. This policy change provides a quasi-experimental setting to study shifts in intra-household decision-making. On the one hand, the policy may relieve pressure on families who previously desired more children, and it may empower women by providing greater reproductive choice. On the other hand, it could reinforce traditional gender roles by increasing women's childcare responsibilities, thereby weakening their economic and social standing within the household. Additionally, systematic gender discrimination against women in the labor market intensified following the Two-Child Policy (He et al., 2023). Thus, the overall effect of this policy on women's status within the household is ambiguous. This policy shift offers particular research value because its timing (2016) aligns with the availability of high-frequency longitudinal data from the China Family Panel Studies (CFPS), which launched in 2010. This provides multiple pre-policy waves and post-policy observations - a crucial empirical advantage that was absent during the One-Child Policy implementation period.

In this paper, I exploit the introduction of the Two-Child Policy in China as a natural experiment to examine how fertility policies affect women's intra-household bargaining power and resource allocation through changes in reproductive choices and household dynamics. Given China's persistent gender inequality and strong son preference, understanding how fertility policies affect women's household status has important policy implications.

To examine these dynamics, I employ complementary reduced-form and structural approaches using data from the China Family Panel Studies (CFPS). I first document changes in key household outcomes, including women's time allocation and fertility decisions, using a difference-in-differences strategy that compares outcomes before and after the policy implementation. I then estimate a collective household demand model following the framework of Browning et al. (2013), which allows me to recover female resource shares and measure

bargaining power directly. My estimation exploits detailed household expenditure data and demographic characteristics to identify how resource allocation shifted across policy periods.

The results reveal that women's resource shares declined significantly following policy implementation, falling from 38% to 25%—a decline of 13 percentage points. The decline was particularly pronounced among families with a first-born daughter. To ensure this decline was not driven by changes in sample composition, I conduct robustness checks examining the relationship between female resource shares and demographic characteristics including both spouses' ages. These findings suggest that expanding fertility rights did not universally empower women. Instead, the policy may have inadvertently reinforced patriarchal household norms in certain contexts. I also find that women's housework hours increased following the policy implementation. These patterns, combined with evidence of increased labor market discrimination documented by He et al. (2023), suggest the policy reinforced traditional gender roles through both increased domestic responsibilities and reduced employment opportunities. The results highlight the need for complementary policies, such as stronger anti-discrimination enforcement in the workplace and enhanced economic support for women during childbearing periods, to ensure that fertility policies achieve their intended goals without undermining women's economic position.

This paper contributes to several strands of literature. First, it contributes to the literature on intra-household bargaining and resource allocation. Theoretical work on collective household models demonstrates that household decisions can be modeled as Pareto-efficient allocations that reflect the preferences and bargaining power of individual members (Chiappori, 1988, 1992). A growing empirical literature seeks to estimate individual resource shares from observed consumption behavior. For example, Lewbel and Pendakur (2008) use an Engel curve-based approach, while Browning et al. (2013) develop a structural estimation strategy based on the Quadratic Almost Ideal Demand System (QUAIDS) and GMM methods, exploiting price variation to identify resource allocation. Following Browning et al. (2013)'s framework, I employ a linear form of Barten scales when modeling couples' budget

shares, which simplifies the estimation while maintaining identification of resource shares.

Second, this paper contributes to the literature on fertility policy and its unintended consequences for intra-household dynamics in China. Previous research documents that the One-Child Policy increased sex-selective behaviors (Ebenstein, 2010) and that changes in fertility policy have led to adverse labor market outcomes for women (He et al., 2023; Li, 2022). Research also shows that intra-household bargaining responds to family composition: Li and Wu (2011) find that first-born sons increase women's decision-making power, while Yang (2024) shows that the Two-Child Policy strengthened men's bargaining power, as reflected in their alcohol consumption patterns. This paper provides the first structural estimates of resource share changes within Chinese households following the Two-Child Policy, using detailed expenditure data to quantify shifts in women's bargaining power.

The remainder of the paper is organized as follows. Section 2 reviews the related literature. Section 3 provides institutional background on China's fertility policies. Section 4 describes the data and sample construction. Section 5 presents reduced-form results. Section 6 introduces the structural model and estimation strategy. Section 7 discusses estimation results and heterogeneity. Section 8 concludes.

2 Related Literature

This paper builds on and contributes to two main strands of literature: the collective household model and intra-household resource allocation; and fertility policy and gender dynamics in China.

2.1 Intra-household Bargaining and Resource Allocation

The collective household model provides a flexible framework for analyzing intra-household decision-making and resource allocation. In contrast to unitary models that assume households act as single decision units, the collective approach allows for the identification of indi-

vidual preferences and explicitly models the bargaining process between household members. Foundational theoretical work by Chiappori (1988, 1992) and Bourguignon and Browning (1991) demonstrates that household outcomes can be understood as Pareto-efficient allocations resulting from individual preferences and bargaining power. *Resource share* is an important outcome of collective household models, which is defined as the fraction of household expenditure consumed by every household members. It can be seen as the result of efficient household bargaining.

However, data availability has made it hard to recover resource shares of households. A growing empirical literature seeks to estimate individual resource shares from observed household consumption behavior. Early approaches relied on Engel curve specifications (Lewbel and Pendakur, 2008) and private assignable goods (Dunbar et al., 2013), while more recent structural methods exploit price variation and flexible demand systems to identify resource allocation. In particular, Browning et al. (2013) develop the BCL framework combining the Quadratic Almost Ideal Demand System (QUAIDS) with generalized method of moments (GMM) estimation to recover both resource shares and the underlying consumption technology, but this method required price variation for identification of resource shares.

Subsequent methodological developments have built upon this foundation: Lewbel and Pendakur (2008) propose a simplified version of the BCL model using Engel curves that avoids the need for price variation, while Dunbar et al. (2013) extend the framework to include children using the DLP approach. These methodologies have been applied in various contexts: the BCL framework has been applied in Canada (Browning et al., 2013), while alternative collective models have been used in the UK (Lise and Seitz, 2011), the Netherlands (Cherchye et al., 2013), India (Calvi, 2020), and Malawi (Dunbar et al., 2013). Recent applications have extended to policy evaluation contexts; for example, Manzur and Pendakur (2023) use structural models combined with difference-in-differences analysis to examine how Canada's Child Benefit affects intra-household resource allocation, finding increased women's resource shares. Similarly, Travassos et al. (2022) apply collective models to assess

elderly poverty, demonstrating the framework's versatility for policy analysis across different demographic groups.

However, applications to Chinese settings remain limited. While Hu (2024) represents a notable exception by using collective models to estimate resource allocation in Chinese multigenerational households, finding that women tend to share resources more than men and elderly receive the smallest resource shares, no existing study has applied the BCL framework to examine policy-induced changes in Chinese household allocation. This paper contributes to filling this gap by providing the first structural estimates of fertility policy impacts on intra-household resource allocation in China using the BCL model.

2.2 Fertility Policy, Gender Dynamics, and Intra-household Bargaining in China

This paper also contributes to a growing literature on the unintended consequences of China's fertility policies for gender dynamics and intra-household bargaining. The One-Child Policy, implemented in 1979, fundamentally altered family behaviors, gender preferences, and demographic outcomes. Early work by Li et al. (2005) quantified the policy's fertility suppression effects using ethnic variation, showing that urban, highly educated women were most affected. Subsequent research has documented impacts on sex-selective behaviors (Ebenstein, 2010), child quality-quantity trade-offs (Li and Zhang, 2017), and long-term life cycle outcomes with significant gender disparities (Huang et al., 2021). The policy also distorted marriage markets, creating gender imbalances that affected social welfare and shifted resource allocation pressures onto women within households (Huang et al., 2023).

More recent work examines the consequences of relaxing fertility restrictions. For example, He et al. (2023) find that the relaxation of the One-Child Policy led to adverse labor market outcomes for women, increasing employer discrimination and reducing female labor force participation. These labor market effects reinforce household-level disadvantages for women, as employers actively reduce hiring and promotion opportunities for women of

childbearing age, weakening women's bargaining foundation both inside and outside the household.

Several studies suggest that intra-household dynamics respond to both family composition and policy changes. Li and Wu (2011) shows that having a first-born son enhances women's decision-making power, as reflected in improved nutritional outcomes and health status. Yang (2024) demonstrates that the Two-Child Policy increased men's bargaining power within the household, evidenced by greater male consumption of alcohol—a good typically associated with individual discretionary spending.

Zhao et al. (2023) provide direct structural evidence of policy-induced resource redistribution, finding that despite the Two-Child Policy enhancing women's reproductive freedom, it widened economic disparities within households, with women's consumption shares declining particularly in families with first-born daughters. This finding highlights the complex interaction between formal policy changes and persistent gender norms. Complementing these consumption-based measures, Bostyn et al. (2023) emphasize how policy changes affect the distribution of non-market work and leisure time between household members, revealing another dimension of intra-household inequality.

While these studies provide important insights, the existing literature is largely based on reduced-form analyses of specific household outcomes (such as fertility, labor supply, or health). There is limited evidence on how policy changes affect the underlying bargaining power and resource shares within households. Although Hu (2024) represents an important contribution using structural approaches, it is based on multigenerational households without policy variation. Moreover, no prior study has provided structural estimates of intra-household bargaining responses to fertility policy shifts using the BCL framework in China. This paper addresses this gap.

This paper fills this gap by providing the first structural estimates of gendered resource allocation in Chinese households across pre- and post-Two-Child Policy periods using the BCL framework. My approach is similar in spirit to Manzur and Pendakur (2023), who use

policy variation to identify changes in women's resource shares, but applies to the unique Chinese context with distinct family structures and cultural norms. The analysis leverages rich expenditure data from the CFPS to demonstrate the applicability of the BCL model in a large-scale, nationally representative Chinese context. This has important implications for understanding how expanding fertility rights interact with persistent patriarchal structures.

3 Institutional Background and Policy Change

China's family planning policies have undergone substantial changes over the past four decades, affecting hundreds of millions of families. The One-Child Policy, introduced in 1979, aimed to curb rapid population growth by restricting most families to having only one child. The policy was enforced through a combination of administrative controls and financial penalties. Families violating the policy faced severe fines, potential loss of public sector employment, and difficulties in obtaining household registration (hukou) for their children[1]. Enforcement was particularly strict in urban areas, while rural families in certain regions were sometimes granted exemptions in practice, particularly if their first child was female. Ethnic minorities were generally exempt from the strictest restrictions, providing a useful comparison group for empirical analysis (Ebenstein, 2010; Bulte et al., 2011; Li et al., 2011; Huang et al., 2023).

Following nearly four decades of strict population control, the Chinese government announced in October 2015 the replacement of the One-Child Policy with the universal Two-Child Policy, effective January 2016[2]. This policy shift represented a significant institutional

[1]The enforcement of the One-Child Policy varied significantly across provinces, but penalties were uniformly substantial. For example, according to Beijing Municipal Social Maintenance Fee Collection Management Measures, Article 7, 2013, families violating the policy by having a second child faced fines ranging from 3-10 times the annual per capita income (approximately 24,100-80,600 yuan, or 3,900-13,000 USD at 2013 exchange rates), with escalating penalties for additional children.

[2]Prior to the universal Two-Child Policy, limited experiments had begun. Starting in 2014, couples where either parent was an only child were permitted to have a second child in certain provinces. While this earlier variation could potentially confound my analysis through anticipatory effects, the concern is limited for two reasons. First, the 2014 policy's scope was geographically restricted and applied only to a subset of eligible couples. Second, since ethnic minorities were generally unaffected by either policy, my empirical strategy

change in China's approach to population control, motivated by concerns about population aging and a shrinking labor force[3]. More importantly, enforcement mechanisms under the Two-Child Policy were dramatically relaxed: the policy imposed no direct financial penalties for exceeding the two-child limit, and local enforcement became relatively lenient.

The dramatic shift from restrictive to permissive fertility policy creates an ideal quasi-experimental setting for studying intra-household dynamics. In China's context, fertility decisions are inherently gendered, reflecting entrenched son preference and patriarchal family structures (Das Gupta et al., 2003). While expanded fertility rights might enhance women's bargaining power through greater reproductive choice, they could simultaneously reinforce traditional gender roles by intensifying expectations for childcare and domestic responsibilities. This tension is further compounded by emerging evidence that the Two-Child Policy has exacerbated labor market discrimination against women (He et al., 2023). Leveraging this institutional change as a natural experiment, this paper examines how fertility policy reforms affect women's intra-household bargaining power and resource allocation.

4 Data and Descriptive Statistics

This study leverages the Two-Child Policy as a natural experiment, partly because its timing (2016) coincides with high-quality longitudinal data availability. While the One-Child Policy era lacked nationally representative household surveys, the Two-Child Policy's implementation in 2016 is uniquely captured by the China Family Panel Studies (CFPS), which launched in 2010 and provides multiple pre- and post-policy waves. This allows for robust causal identification of policy effects on intra-household dynamics.

This study primarily utilizes data from the China Family Panel Studies (CFPS), a na-

comparing Han Chinese and ethnic minority households helps isolate the Two-Child Policy's impact.

[3]China's demographic transition was already evident by the mid-2010s. According to the Ministry of Civil Affairs' 2015 Social Service Development Statistical Report, by the end of 2015, China's population aged 60 and above reached 222 million, accounting for 16.1% of the total population, while those aged 65 and above numbered 144 million, representing 10.5% of the total population. This aging trend provided strong demographic pressure for fertility policy reform.

tionally representative biennial longitudinal survey administered by Peking University. Initiated in 2010, the CFPS covers over 16,000 households and approximately 40,000 individuals across 25 provinces, representing about 95% of China's population. The survey captures detailed information on household composition, income, consumption, fertility preferences and behaviors, labor market outcomes, and social norms (Xie and Hu, 2014). My analysis employs all available waves from 2010 to 2022, encompassing periods before and after the introduction of the Two-Child Policy.

4.1 Key Variables

Individual and Household Demographics. The CFPS provides comprehensive individual-level demographic variables, including age, gender, marital status, educational attainment, employment status, occupation, income, and urban/rural residence. At the household level, the survey captures economic and compositional characteristics, such as household membership, decision-making authority over expenditures, and detailed information about children in the household. These variables serve both as covariates in reduced-form analyses and as distribution factors in the structural model.

Household Consumption. A central component of this study is the measurement of household-level consumption expenditures. The CFPS collects detailed expenditure data across eight broad categories: food, clothing, housing, daily necessities, medical care, transportation and communication, education and entertainment, and other goods and services. These data enable the estimation of demand systems and construction of budget shares used in structural modeling of intra-household resource allocation. Notably, these eight categories align precisely with the CPI data from the China Statistical Yearbooks, thereby satisfying the requirements for estimating the BCL model.

Fertility and Social Norms. Additionally, the CFPS tracks rich information on fertility behaviors and preferences through several variables. The survey includes self-reported ideal

number of children (2014, 2018) and ideal number of boys (2014), as well as stated fertility intentions (2020, 2022). Additionally, the 2014 wave captured measures of social norms related to gender roles and son preference.

4.2 Price Data

To account for regional price variation that is required for the identification of resource share in (Browning et al., 2013), I supplement the CFPS data with provincial-level Consumer Price Index (CPI) data from the China Statistical Yearbooks (2010–2022). These data were obtained from the National Bureau of Statistics of China website. For each province-year combination, I construct price indices for the eight consumption categories recorded in the CFPS. These categories are: food, clothing, housing, daily necessities, medical care, transportation and communication, education and entertainment, and other goods and services. Notably, the National Bureau of Statistics of China also classifies consumption expenditures into these eight categories, allowing for a direct correspondence between the constructed price variables and the consumption variables collected in the CFPS. Following Browning et al. (2013), all price indices are normalized to a common base year (2016 = 100) to ensure comparability across time periods. For years after 2016, the price index is updated recursively as:

$$\text{Index}_t = \text{Index}_{t-1} \times \left(\frac{\text{CPI}_t}{100} \right) \tag{1}$$

For years before 2016, the index is back-calculated as:

$$\text{Index}_t = \frac{\text{Index}_{t+1}}{\left(\frac{\text{CPI}_{t+1}}{100} \right)} \tag{2}$$

The resulting price variables—denoted $p_{\text{food}}, p_{\text{dress}}, p_{\text{house}}, p_{\text{daily}}, p_{\text{med}}, p_{\text{trco}}, p_{\text{eec}}, p_{\text{other}}$ – serve as key inputs in the structural estimation of the single individuals' and couples' Quadratic Almost Ideal Demand System (QUAIDS) in section 6.4.

4.3 Sample Construction

Having described the data sources, I now turn to sample construction. My analysis draws on data from the China Family Panel Studies (CFPS), a nationally representative biennial household survey spanning the period 2010–2022. I construct three primary analytic samples corresponding to different components of the study: reduced-form analysis of household outcomes and structural estimation of intra-household resource allocation.

First, for the reduced-form analysis of women's housework hours, I construct a sample of married women who were aged 18–50 as of 2016, observed across all CFPS waves. This restriction ensures comparability across cohorts and aligns with the typical childbearing and household formation window. The unit of observation is the individual woman, and the sample includes all such women with non-missing information on housework hours and key covariates[4].

Second, for the reduced-form analysis of fertility outcomes, I construct a sample of married households (with both spouses observed) in which the wife was aged 18–50 as of 2016. Following prior literature (Yang, 2024), I restrict the sample to households with fewer than three children and where the stated fertility preference does not exceed three children. This restriction excludes households unlikely to respond to the Two-Child Policy due to having already achieved or exceeded their desired family size.

Third, for the structural estimation of female resource shares, I construct a sample of married households and single individuals with complete consumption and demographic data. Specifically, I include: (1) Married couples (with both spouses observed) reporting complete expenditures across the eight CFPS consumption categories and (2) Single men and single women aged 18–50 with non-missing consumption and demographic information, serving as reference groups for estimating individual preferences.

[4]While it is conceptually desirable to analyze housework allocation at the couple level (e.g., as the ratio of female to total housework hours), the CFPS contains substantial missing data on male housework hours in the merged couple-level responses. Therefore, I focus on female housework hours in the main analysis and will work on complementary results on housework ratios in the future for robustness.

4.4 Descriptive Statistics

Tables 1, 3, and 6 present summary statistics for the three analytic samples used in my paper. The CFPS data provides a comprehensive longitudinal framework for examining household consumption patterns, fertility dynamics, and intra-household bargaining before and after the Two-Child Policy.

Housework Sample. Table 1 summarizes key characteristics of the female sample used to analyze housework allocation. Married women in this sample devote an average of 2.89 hours per day to housework activities, with considerable variation across households (SD = 2.23 hours). Female employment rates are relatively high at 72.8%, reflecting strong labor force participation among Chinese women. The sample is evenly split between urban and rural residents, with an average educational attainment of just over 9 years, indicating considerable heterogeneity in socio-economic backgrounds.

Fertility Sample. Table 3 reports statistics for the household-level sample examining fertility outcomes. The mean number of newborns is 0.083 per household, and the female employment rates remain consistently high at 76.4%, with an average education level of 8.9 years. The ethnic composition shows 91.8% Han Chinese households, closely matching the national demographic profile.

Structural Estimation Sample. Table 6 presents summary statistics for the sample used in structural estimation, encompassing both single individuals and married couples. Single women and men demonstrate relatively high educational attainment (13.35 and 12.15 years, respectively) and employment rates (91% for women and 94% for men), consistent with positive selection into singlehood among younger, more educated cohorts. Among married couples, wives contribute an average of 37% to household income, indicating substantial but unequal economic participation. Consumption patterns show that food, housing, and transportation represent the largest budget shares.

5 Reduced-form Evidence

To provide initial evidence on how the Two-Child Policy affected household dynamics and gender outcomes, I begin with a set of reduced-form analyses using a difference-in-differences (DID) framework. This approach compares changes in outcomes between Han Chinese households (treatment group) and ethnic minority households (control group) before and after the policy shift in 2016.

The identification strategy builds on the fact that ethnic minorities were generally exempt from the strict enforcement of the One-Child Policy and were thus less affected by its relaxation. In contrast, Han Chinese households faced stringent fertility restrictions prior to 2016. As such, changes in outcomes among Han households relative to minorities can be credibly attributed to the policy change, under the parallel trends assumption.

Formally, I estimate the following specification:

$$Y_{it} = \beta_0 + \beta_1(\text{Post2016}_t \times \text{Han}_i) + \delta_t + \alpha_i + X'_{it}\gamma + \varepsilon_{it} \tag{3}$$

where Y_{it} represents the outcome of interest for individual or household i in period t; Post2016_t is an indicator for years after the policy implementation (2016 onward); Han_i is an indicator for Han ethnicity; δ_t and α_i are year and individual fixed effects; and X_{it} is a vector of individual or household controls. The coefficient β_1 captures the differential effect of the policy on Han households relative to ethnic minorities, which identifies the causal impact of the Two-Child Policy under the assumption that Han and minority households would have followed parallel trends in the absence of the policy change.

I examine two key outcomes that capture different dimensions of household dynamics: the division of household labor and fertility decisions. I also document the heterogeneous effects of the Two-Child Policy on fertility decisions by child gender. Sample construction varies by outcome due to different units of analysis and data availability. Housework analyses use individual-level data for married women, fertility analyses merge wives to household-level

data, and son preference analyses restrict to families with at least one child at the policy implementation.

5.1 Impact on the Division of Household Labor

Table 2 presents results for one key dimension of intra-household dynamics: female housework hours. The baseline mean for female housework is 2.89 hours per day (Table 1). In the specification with controls (column 2), the estimated effect of 0.265 hours represents a 9.2% increase in daily housework time for Han women relative to minorities. Across all specifications, I find consistently positive coefficients on the Post $\times$ Han interaction term, suggesting that Han women experienced larger increases in housework time relative to ethnic minority women following the implementation of the Two-Child Policy. Sample sizes decrease substantially across specifications due to the availability of control variables (column 2) and the requirement of multiple time periods per individual for fixed effects estimation (column 3). The individual fixed effects specification, while more demanding in terms of data requirements, provides the most rigorous identification by controlling for all time-invariant individual characteristics. Figure 1 shows the corresponding event study (parallel trends) graph, where the post-policy period is marked by a noticeable upward shift in female housework hours among Han women, further supporting the validity of the parallel trends assumption.

While the estimates are statistically insignificant across all specifications ($p > 0.10$), though economically meaningful, the pattern is consistent with a modest increase in the household burden on women. This result aligns with qualitative concerns that fertility policy liberalization may have reinforced traditional gender roles within the household.

5.2 Impact on Fertility Outcomes

Having established suggestive evidence of changes in household labor division, I now turn to fertility outcomes, where the policy's effects should be most direct given its explicit focus on birth restrictions. Table 4 shows that the policy significantly increased fertility among

Han households. The interaction term indicates a 0.021 increase in the number of newborns for Han households relative to minority households, significant at the 5% level. Relative to the baseline mean of 0.083 newborns per household, this represents a substantial 25% increase in fertility among Han families. Figure 2 presents the parallel trends graph, which shows that prior to the policy change, Han households had significantly fewer newborns than minority households, reflecting the binding nature of the One-Child Policy restrictions on the Han population. After the policy's implementation, this gap disappears, consistent with the expectation that only Han households were subject to birth restrictions under the One-Child Policy prior to 2016.

This result suggests that the policy successfully relaxed previous fertility constraints and increased birth rates among the formerly restricted Han population. It also provides supporting evidence that the Two-Child Policy induced meaningful behavioral changes in household fertility decisions. However, in column (3), the estimated effect becomes statistically insignificant once individual fixed effects are included. This suggests that the average treatment effect on fertility may have been modest. This finding is consistent with macro-level trends and prior studies documenting limited fertility responses to the policy at the national level.

5.3 Heterogeneous Effects on Having a Newborn Son by First Child Gender

In the Chinese context, son preference plays a significant role in both household fertility decisions and intra-household bargaining dynamics. This preference stems from traditional patrilineal kinship systems where sons carry the family line and provide old-age support. In traditional Chinese culture, women who bear sons are accorded greater honor and social recognition within Chinese society, which may enhance their bargaining power within the household. This dynamic reflects deeply embedded cultural norms that operate independently of formal institutional incentives.

To investigate how the effects of fertility policy on intra-household dynamics may vary

with prevailing son preference norms, I examine heterogeneity in having a newborn son by the gender of the first-born child. This heterogeneity reveals that fertility policy changes can have unintended consequences for gender balance and family composition, even when the policy itself is gender-neutral. Table 5 presents difference-in-differences estimates of the probability of having a newborn son, conditional on the gender of the first child.

The findings reveal substantial heterogeneity: among families with a first-born daughter, the Two-Child Policy led to a significant 19.8 percentage point increase in the probability of having a son. In contrast, families with a first-born son exhibited no significant change. This represents a substantial deviation from random gender determination. This pattern is consistent with families using the additional birth opportunity under the Two-Child Policy to achieve their desired family composition. Families with a first-born daughter were more likely to continue childbearing until they achieved a son, while families who already had a son were satisfied with their existing composition. These results indicate that the Two-Child Policy created new opportunities for son-seeking behavior, which resulted in significantly skewed sex ratios among second-born children.

While informative, the reduced-form results alone cannot directly measure changes in intra-household bargaining power. To quantify these dynamics more precisely, I turn to a structural collective household model, which allows me to estimate female resource shares and formally assess how resource allocation within households evolved following the Two-Child Policy. The next section describes this structural framework in detail.

6 Structural Model and Estimation

To directly quantify changes in intra-household resource allocation following the Two-Child Policy, I estimate a structural collective household model. This framework enables recovery of individual resource shares within households, specifically the share of household resources effectively controlled by women, providing a more precise measure of bargaining power than

conventional reduced-form proxies.

6.1 Theoretical Framework

The model builds on the collective approach to household behavior, following Browning et al. (2013). In this framework, rather than treating the household as a unitary decision-maker, household decisions result from Pareto-efficient allocations that reflect the distinct preferences and bargaining power of individual members.

The household consists of two decision-makers: a female (f) and a male (m), each with utility functions $U_f(x_f)$ and $U_m(x_m)$. The household chooses consumption allocations to maximize a weighted sum of utilities:

$$\max_{x_f, x_m, z} \ \mu(p/y) \cdot U_f(x_f) + (1 - \mu(p/y)) \cdot U_m(x_m) \tag{4}$$

subject to:

$$z = F(x_f + x_m) \quad \text{(technology constraint)}$$
$$p'z = y \quad \text{(budget constraint)}$$

Here, z represents observed household consumption, while $\mu(p/y)$ determines the effective bargaining weights that reflect each member's influence in household decisions. The function $F(\cdot)$ captures the technology that transforms individual consumption into observed household purchases, accounting for economies of scale and public goods within the household. The corresponding female resource share η is defined as:

$$\eta = \frac{\pi' x_f}{\pi'(x_f + x_m)} \in [0, 1] \tag{5}$$

where π is a vector of shadow prices that determine the female's effective purchasing power within the household (Browning et al., 2013). Intuitively, η measures the fraction of

household resources effectively controlled by the female, with values closer to 1 indicating greater female control over household spending decisions. The central question is whether η shifted systematically following the Two-Child Policy implementation.

6.2 Consumption Technology

Observed household purchases reflect both individual consumption preferences and the technology through which goods are shared. I adopt the specification of Browning et al. (2013), modeling the consumption technology as:

$$z = Ax + a \tag{6}$$

where $x = x_f + x_m$, A is a matrix of Barten scales that capture household economies of scale, and a represents fixed consumption costs.

The Barten scales in matrix A reflect the degree to which different goods can be shared within the household. Goods with higher publicness (such as housing or utilities) exhibit larger economies of scale, corresponding to smaller diagonal elements in A, as households can achieve the same consumption level with lower total expenditure. Conversely, purely private goods (such as clothing) have diagonal elements closer to unity, indicating limited scope for sharing.

6.3 Identification Strategy

Identification of η and A relies on three key conditions. First, the system must include at least three distinct consumption goods to provide sufficient variation in sharing patterns across different types of goods; my data include eight categories of household spending. Second, individual preferences must be identifiable from consumption data on singles, under the assumption that preferences do not change upon marriage. This assumption allows me to use single individuals' consumption patterns to infer the preferences of married individuals.

Third, sufficient price variation is required to trace out demand responses and separate preference effects from sharing effects; I exploit provincial-level price indices across all eight consumption categories to satisfy this requirement.

Under these conditions, Browning et al. (2013) show that the sharing rule η and consumption technology A are nonparametrically identified.

6.4 Empirical Implementation

6.4.1 Preference Estimation for Singles

Following Browning et al. (2013), I model individual preferences using the Quadratic Almost Ideal Demand System (QUAIDS) of Banks et al. (1997). The QUAIDS specification allows for flexible Engel curves through its quadratic term. For each single individual, budget shares are specified as:

$$\omega^i(p/y^i) = \alpha^i + \Gamma^i \ln p + \beta^i \left[\ln(y^i) - c^i(p)\right] + \frac{\lambda^i}{b^i(p)} \left[\ln(y^i) - c^i(p)\right]^2 \tag{7}$$

where $i = f, m$ denotes gender. The price indices $c^i(p)$ and $b^i(p)$ are defined as:

$$c^i(p) = \delta^i + (\ln p)'\alpha^i + \frac{1}{2}(\ln p)'\Gamma^i \ln p \tag{8}$$

$$\ln b^i(p) = (\ln p)'\beta^i \tag{9}$$

Here, α^i and β^i are vectors of parameters, Γ^i is a matrix of price interaction parameters, λ^i captures the quadratic income effects, and δ^i is a scalar parameter.

I estimate the QUAIDS demand parameters (α^i, β^i, Γ^i, and λ^i) separately for single men and single women in the sample. Following the identification strategy outlined above, I assume that individuals maintain the same consumption preferences when transitioning from single to married status. Under this assumption, the estimated parameters for single

men can be applied to married men within couples, and the parameters for single women can be applied to married women, enabling the identification of household-level sharing and technology parameters in the subsequent estimation stages.

6.4.2 Parameterization of the Sharing Rule

Following the collective household literature, I parameterize the female resource share η_i for household i using a logistic specification that maps observable distribution factors to the unit interval:

$$\eta_i = \frac{\exp(\mathbf{x}_i'\boldsymbol{\theta})}{1 + \exp(\mathbf{x}_i'\boldsymbol{\theta})} \tag{10}$$

where $\mathbf{x}_i$ is a household specific vector of distribution factors and $\boldsymbol{\theta}$ is a vector of parameters. This form ensures that $\eta_i \in (0, 1)$ while maintaining flexibility to capture non-linearity between distribution factors and bargaining power. The vector of distribution factors $\mathbf{x}_i$ includes variables that should influence intra-household resource allocation but not directly enter individual utility functions:

$$\begin{aligned}\mathbf{x}_i = \Big[&1, \text{wife's income share}_i, \text{age gap}_i, \text{education gap}_i, \\ &\text{urban husband}_i, \text{urban wife}_i, \log(\text{household consumption}_i)\Big]'\end{aligned}$$

The wife's income share variable captures relative economic contributions. Age and education gaps proxy for relative human capital and potential asymmetries in labor market opportunities. The urban residence indicators control for differential access to employment. Total household consumption (in logs) accounts for potential scale effects in resource sharing. This gives a total of 7 distribution factors (the 6 listed above plus the constant).

6.4.3 Parameterization of Consumption Technology

Within the linear consumption technology framework $z = Ax + a$, I adopt a diagonal specification for the technology matrix A, where the diagonal elements represent Barten scales that capture the degree of publicness for each good. I parameterize the Barten scales for each good k as:

$$\lambda_k = 0.5 + \frac{0.5}{1 + \exp(-\gamma_k)}, \quad k = 1, \ldots, 8 \tag{11}$$

where γ_k are parameters to be estimated. This ensures $\lambda_k \in (0.5, 1)$, consistent with the assumption that all goods exhibit some degree of publicness within the household. The lower bound of 0.5 corresponds to purely public goods that exhibit perfect economies of scale, meaning that the couple can consume the same quantity as two singles while purchasing only half the amount. The upper bound of 1 represents purely private goods with no economies of scale, where the couple must purchase the full sum of individual consumption levels. Goods such as housing and utilities are expected to exhibit greater economies of scale (lower λ_k), while more private goods such as clothing should have λ_k closer to one.

6.4.4 Couples' Demand Equations and GMM Estimation

Couples' Demand I estimate couples' consumption behavior using a simplified structural model inspired by Browning et al. (2013), and linearized following Lechene et al. (2022). The linearization simplifies the complex shadow price system in the original Browning et al. (2013) framework while maintaining the core insights about intra-household resource allocation and consumption technology.

The observed budget shares for couples are modeled as:

$$\hat{\mathbf{s}}_i = \boldsymbol{\lambda} \circ \left[(1 - \eta_i) \cdot \mathbf{s}_i^m + \eta_i \cdot \mathbf{s}_i^f \right] \tag{12}$$

where $\boldsymbol{\lambda} = (\lambda_1, \lambda_2, \ldots, \lambda_8)'$ is the vector of Barten scales for each of the eight consumption

goods, and $\circ$ denotes element-wise multiplication. η_i is female resource share in household i. $\mathbf{s}_i^m$ and $\mathbf{s}_i^f$ are the predicted budget share vectors for the male and female members of couple i, respectively, derived from the QUAIDS estimation on singles with comparable demographic characteristics. This specification shows that observed couple budget shares represent a weighted average of individual preferences (captured by $\mathbf{s}_i^m$ and $\mathbf{s}_i^f$), adjusted for consumption technology effects (the Barten scales $\boldsymbol{\lambda}$) and intra-household resource allocation (the sharing parameter η_i). I derive these predicted shares by applying the preference stability assumption that married individuals maintain the same consumption preferences as their single counterparts of the same gender.

Interpretation of $\boldsymbol{\lambda}$ (Barten Scales) I model $\boldsymbol{\lambda}$ as Barten scales operating at the budget share level, which enter the couples' budget share equation linearly. This approach contrasts with the original formulation in Browning et al. (2013), where Barten scales $\mathbf{A}$ enter the household technology function nonlinearly through shadow prices $\tilde{p} = Ap$. Instead, I incorporate the Barten scales directly at the budget share level to achieve computational tractability while preserving the essential economic insights about consumption sharing within households.

This modification allows for a more straightforward estimation procedure, as the budget share equation becomes linear in the Barten scale parameters, avoiding the complex shadow price calculations required in the original framework. The economic interpretation of the Barten scales remains unchanged from the parameterization described above, capturing the degree of publicness and associated economies of scale for each consumption category.

GMM Estimation I estimate the sharing rule parameters $\boldsymbol{\theta}$ and consumption technology parameters $\boldsymbol{\gamma}$ via Generalized Method of Moments (GMM), using the moment conditions:

$$\mathbb{E}\left[Z_i' \cdot \left(\mathbf{s}_i - \boldsymbol{\lambda} \circ \left[(1-\eta_i)\mathbf{s}_i^m + \eta_i \mathbf{s}_i^f\right]\right)\right] = 0 \tag{13}$$

where $\mathbf{s}_i$ denotes the observed budget shares of couples. This specification generates a system of moment conditions that jointly identify the sharing rule parameters and consumption technology parameters.

The instrument matrix Z_i comprises variables that affect budget shares through their impact on intra-household bargaining power or consumption technology, but are orthogonal to unobserved preference heterogeneity. Specifically, the instrument set includes: (1) demographic variables that serve as distribution factors (wife's income share, age and education gaps between spouses, urban residence indicators for both spouses), (2) regional dummies capturing local economic conditions, and (3) logarithms of provincial-level prices for each consumption category (food, clothing, housing, daily necessities, medical care, transportation and communication, education and entertainment). This yields a total of 14 instruments, generating 112 moment conditions when interacted with the 8 consumption goods.

To capture policy-induced structural changes, I estimate the model separately for the pre-policy period (2010-2014) and post-policy period (2016-2022). This approach allows all parameters to vary freely across periods, thereby accommodating potential shifts in both sharing rules and consumption technology following the Two-Child Policy implementation.

7 Structural Estimation Results

This section presents estimation results of female resource shares before and after the Two-Child Policy using the structural collective household model. The results provide direct evidence on how the policy affected intra-household resource allocation and female bargaining power. I first summarize the estimation of individual preferences from single-person data, followed by estimates of the sharing rule and consumption technology for couples. Finally, I examine patterns of heterogeneity by first child gender and conduct robustness checks to assess the validity of the findings.

7.1 Main Estimation Results

7.1.1 Descriptive Statistics for Singles and Couples

Table 6 reports summary statistics for the single and couple samples used in estimation. The data reveal three key patterns. First, couples exhibit higher average annual consumption than singles, reflecting household economies of scale. Second, budget shares vary systematically across groups: single females allocate more to clothing and housing, while single males allocate more to food, daily necessities, transportation and entertainment. Couples' spending patterns fall between these extremes, reflecting joint preferences and household public goods. Third, couples tend to be older with lower average education levels than single individuals.

7.1.2 Stage 1: Estimation of Individual Preferences

I estimate QUAIDS parameters separately for single females and males. Table 7 presents the estimation results for parameters α and β from Equation 7. The estimates show substantial gender differences in consumption preferences. Females demonstrate significantly higher budget shares for clothing and housing expenditures, while males allocate more resources to transportation and food.

Income elasticities (β) also vary substantially by gender. Male food demand shows positive income effects, indicating food is a normal good for men. Female food demand displays a negative relationship with income, suggesting that food is an inferior good for women. These systematic gender differences in consumption patterns provide crucial identifying variation for estimating the structural model's resource shares when applied to couple data.

7.1.3 Stage 2: Sharing Rule Estimates

Table 8 Panel A presents GMM estimates of the sharing rule parameters $\boldsymbol{\theta}$ across the pre- and post-Two-Child Policy periods. The results show three fundamental shifts in intra-

household bargaining dynamics. First, the constant term transitions from negative pre-policy (-1.10) to positive post-policy (0.26), indicating an upward shift in the baseline level of female resource shares independent of observable characteristics. Second, the coefficient on wife's income share exhibits a substantial decline in magnitude from -1.66 (significant at the 10% level) to -0.15 (statistically insignificant), suggesting that income-based bargaining power has weakened following policy implementation. Third, the coefficient on education gap reverses sign from positive (0.06) to negative (-0.08), implying that women's relative educational advantage may have become less effective in securing resource shares after the policy change.

These findings collectively indicate a marked reduction in the responsiveness of female bargaining power to traditional distribution factors, potentially reflecting shifts in household decision-making processes or changes in the salience of different bargaining mechanisms following the Two-Child Policy.

7.1.4 Stage 2: Consumption Technology Estimates

Panel B of Table 8 reports estimates of the Barten scales in budget shares $\boldsymbol{\lambda}$, which capture the degree of publicness in household consumption. The results show consistent patterns across both periods.

Housing, other goods, and education/entertainment categories exhibit substantial economies of scale, as evidenced by Barten scales well below unity (ranging from 0.72 to 0.83). This suggests these goods possess significant public characteristics within households. Conversely, food, daily necessities, and medical care maintain scales closer to 1.0, indicating these categories function predominantly as private goods with limited sharing benefits. Clothing exhibits substantial economies of scale in this data, which contrasts with its traditional classification as a private good.

The post-policy period shows meaningful changes in consumption technology. The Barten scale for food decreases from 1.00 to 0.91, suggesting increased joint consumption patterns

for food items. Similarly, the scale for education/entertainment declines from 1.00 to 0.83, indicating enhanced economies of scale in this category following policy implementation. These shifts may reflect changes in family composition or consumption patterns induced by the policy change.

The Sargan test statistics (104.40 pre-policy, p=0.29; 117.93 post-policy, p=0.07) indicate that the overidentifying restrictions are not rejected at conventional significance levels, supporting the validity of the instrumental variable strategy and model specification.

7.1.5 Female Resource Share: Descriptive Patterns

Figure 4 and table 9 present the distribution of estimated female resource shares $\boldsymbol{\eta}$ across policy periods. The results show a striking deterioration in women's economic position within households following the Two-Child Policy. The average female resource share declines substantially from 38% in the pre-policy period to 25% in the post-policy period—a reduction of approximately 34%. This decline is accompanied by notable compression in the distribution: the standard deviation decreases from 0.114 to 0.068, and the range narrows considerably (from 0.097-0.741 to 0.115-0.523), suggesting convergence toward uniformly lower levels of female economic control within households.

Cross-country comparisons underscore the particularly disadvantaged position of Chinese women in intra-household resource allocation. For instance, Browning et al. (2013) estimate an average female resource share of 0.63 in Canada, while Calvi (2020) reports 0.445 for India. Even the pre-policy average of 0.38 in China remains below these comparative standards, highlighting persistent gender inequalities in household bargaining power.

The post-policy decline thus represents a further erosion of an already precarious position, suggesting that the relaxation of fertility restrictions may have inadvertently weakened women's economic standing within Chinese households. These patterns raise important questions about the unintended consequences of fertility policy reforms on gender equity, particularly given that the Two-Child Policy was partly motivated by concerns about demo-

graphic imbalances and women's welfare.

7.2 Heterogeneity by First Child Gender

Figure 5 shows striking heterogeneity in the policy's impact on female resource shares according to first child gender. While both demographic groups experienced substantial declines in η following the Two-Child Policy, the magnitude of reduction is markedly more severe among families with firstborn daughters. Specifically, households with firstborn sons exhibit a decline from approximately 0.38 to 0.26 (a 32% reduction), whereas families with firstborn daughters experience a more pronounced decrease from 0.38 to 0.23 (a 39% reduction).

This differential impact aligns with China's deeply entrenched cultural preference for male offspring. The relaxation of fertility restrictions under the Two-Child Policy likely created particularly strong incentives for daughter-first families to pursue a second child in hopes of having a son. This dynamic may have fundamentally altered intra-household bargaining processes, as the prospect of achieving the culturally preferred family composition—having at least one male child—could have shifted negotiating power away from wives and toward husbands who prioritize son preference.

The asymmetric response across family types suggests that fertility policy reforms interact with pre-existing cultural norms in ways that can exacerbate gender inequalities. Rather than simply providing reproductive choice, the policy appears to have reinforced patriarchal family structures, particularly in contexts where the existing child composition deviates from traditional preferences.

This finding underscores the importance of considering cultural factors when designing population policies. Seemingly gender-neutral reforms may have differential impacts that reflect and amplify underlying social biases, suggesting that policymakers must account for cultural context when evaluating the broader consequences of demographic interventions.

7.3 Robustness Check: Ruling Out Cohort Effects

A critical methodological concern is whether changes in sample composition over time—particularly demographic shifts such as aging—could confound the observed decline in female resource shares, potentially leading to spurious policy effects. To address this concern, I systematically examine the relationship between estimated resource shares η and couples' ages across the observation period.

Figures 6 and 7 present relationships between female resource shares and wives' and husbands' ages, respectively. The analysis shows no systematic age-related decline in female bargaining power that could account for the observed policy effects. Wife's age exhibits a relatively stable relationship with resource shares across the 20-50 age range, with modest fluctuations around a mean of approximately 0.32. Similarly, husband's age shows no consistent downward trend that would suggest cohort-driven changes in household bargaining dynamics. Figure 8 provides additional evidence by examining the relationship between female resource shares and spousal age gaps (husband minus wife age). The results demonstrate a notable pattern: female resource shares decline monotonically as husbands become older relative to their wives, consistent with age-based power dynamics within marriages.

These robustness checks provide strong evidence that the documented decline in female resource shares following the Two-Child Policy reflects genuine policy-induced changes in intra-household bargaining rather than cohort aging. The stability of age-resource share relationships across periods supports the validity of attributing the observed changes to the policy intervention itself.

8 Discussion and Conclusion

This paper examines how China's Two-Child Policy reform affected intra-household resource allocation and female bargaining power, providing new evidence on the complex interactions between fertility policy and gender dynamics within households. Using micro-level data

from the China Family Panel Studies (CFPS) and employing a structural collective household model, the analysis reveals striking and largely unintended consequences of this major demographic policy shift.

The structural estimation results demonstrate that the Two-Child Policy was associated with a substantial deterioration in women's economic position within households. Female resource shares declined dramatically from an average of 38% before the policy to 25% after its implementation—a reduction of approximately one-third. This decline was accompanied by fundamental changes in the determinants of bargaining power: post-policy, female resource shares became notably less sensitive to women's relative income, suggesting that traditional economic levers of household influence were weakened by the policy reform.

These structural findings are reinforced by complementary reduced-form evidence. Following the policy change, Han households—previously more constrained under the One-Child Policy—experienced significant increases in fertility, particularly among families with first-born daughters where families were more likely to pursue having a son. This pattern reflects the persistence of deeply rooted son preference in Chinese culture. Simultaneously, women's housework burden increased substantially, a pattern consistent with their deteriorating bargaining position within the household.

The evidence points to a troubling paradox: rather than universally empowering women through expanding reproductive choices, the Two-Child Policy appears to have reinforced patriarchal household structures in many contexts. The ability to pursue a second child seems to have intensified son-seeking behavior and re-centered household priorities around traditional family roles. This shift thereby undermined women's intra-household standing.

Several mechanisms likely contribute to these outcomes. First, cultural norms emphasizing male offspring remain deeply embedded in many parts of China, and the policy reform enabled latent son preference to manifest more fully in fertility decisions. Second, the increased childcare burden associated with larger families led to a reallocation of household tasks and economic power that disproportionately affected women. Third, He et al. (2023)

documents that labor market discrimination against women intensified following the policy change, directly undermining women's economic bargaining power both within and outside the household. The heterogeneous effects by firstborn gender provide particularly compelling evidence for these mechanisms. Families with firstborn daughters experienced more severe declines in female resource shares, consistent with intensified patriarchal bargaining dynamics among households seeking culturally preferred family compositions.

These findings carry significant implications for China's ongoing demographic policy adjustments. As the country continues to liberalize fertility restrictions in response to population aging and declining birth rates, policymakers must carefully consider how such reforms interact with entrenched gender norms. The results suggest that fertility policy liberalization alone may be insufficient—or even counterproductive—for promoting gender equality without complementary interventions. Effective policy responses might include expanded access to high-quality childcare, strengthened workplace protections for mothers, parental leave policies that encourage paternal involvement in child-rearing, and broader educational campaigns to challenge traditional gender norms. Without such accompanying measures, future fertility policy reforms risk perpetuating or exacerbating existing gender inequalities within households.

The analysis presented here underscores the importance of understanding fertility policy as inherently gendered, with effects that extend far beyond simple demographic outcomes. As societies worldwide grapple with demographic transitions and fertility policy adjustments, the Chinese experience offers valuable lessons about the unintended consequences of seemingly gender-neutral reforms and the critical need for policy designs that explicitly consider and protect women's economic empowerment within households. Future research examining longer-term effects and comparative policy interventions could further illuminate pathways toward more gender-equitable demographic policies.

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Tables

Table 1: Summary Statistics: Female Housework Hours (Wives Only)

	Mean	SD	Min	Max	Obs
Female Housework Hours	2.89	2.23	0	24	19,232
Age	34.29	7.14	16	51	36,724
Urban	0.509	0.5	0	1	36,489
Education	9.08	4.5	0	22	31,292
Employed	0.728	0.445	0	1	36,512
Salary	2,520	2,649	0	80,000	16,110
Ethnicity	0.903	0.295	0	1	36,651

Notes: This table reports descriptive statistics for married women aged 18–50 in 2016. The sample includes observations from CFPS 2010–2022 waves. Urban status, employment, and ethnicity are binary indicators. Female housework hours are reported directly by respondents. Sample construction is detailed in Section 4.

Table 2: Effect of Two-Child Policy on Female Housework Hours (DID Estimates)

	Basic	With Controls	Individual FE
Post × Ethnicity	0.082	0.265	0.430
	(0.107)	(0.222)	(0.470)
R^2	0.115	0.307	0.649
Observations	19198	6156	3021
Individual Controls	No	Yes	Yes
Year FE	Yes	Yes	Yes
Family FE	No	No	Yes

This table reports difference-in-differences estimates of the Two-Child Policy's impact on female housework hours, using ethnic minorities as the comparison group. Standard errors are clustered at the individual level. Data are from the CFPS (2010–2022).
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Summary Statistics: Fertility Outcomes (Wives Merged to Family Level)

Variable	Mean	SD	Min	Max	Obs
Number of newborns	0.083	0.281	0.0	3.0	19,245
Age of wife	36.453	6.793	17.0	51.0	19,245
Urban status of wife (1=urban)	0.543	0.498	0.0	1.0	19,144
Years of education of wife	8.914	4.578	0.0	22.0	17,099
Employment status (1=employed)	0.764	0.425	0.0	1.0	19,152
Ethnicity (1=Han)	0.918	0.274	0.0	1.0	19,225

Notes: This table reports descriptive statistics for married women aged 18–50 in 2016, merged to household-level data. The sample includes observations from CFPS 2010–2022 waves. Urban status, employment, and ethnicity are binary indicators. Sample construction is detailed in Section 4.

Table 4: Effect of Two-Child Policy on Number of Newborns (DID Estimates)

	Basic	**With Controls**	**Individual FE**
Post × Han Ethnicity	0.002	0.021**	0.017
	(0.010)	(0.010)	(0.011)
R^2	0.008	0.120	0.327
Observations	19,245	16,922	15,620
Individual Controls	No	Yes	Yes
Year FE	Yes	Yes	Yes
Individual FE	No	No	Yes

Notes: This table reports difference-in-differences estimates of the Two-Child Policy's impact on the number of newborns, using ethnic minorities as the comparison group. Standard errors are clustered at the individual level. Data are from the CFPS (2010–2022).
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Policy Effect by First Child Gender: Han vs. Minority

	First Child: Son	**First Child: Daughter**
Post × Han Ethnicity	−0.053	0.198***
	(0.068)	(0.070)
R^2	0.110	0.111
Observations	613	719
Individual Controls	Yes	Yes
Year FE	Yes	Yes

Notes: Each column reports separate regressions by the gender of the first child. The sample is restricted to families with at least one child. Standard errors in parentheses are clustered at the individual level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Summary Statistics for Singles and Couples

	Single	**Single**	**Couples**		
	Females	**Males**	**Total**	**Husband**	**Wife**
Sample size	1,048	2,031	1,846	–	–
Annual consumption (CNY)	50,771	53,401	59,469	–	–
Wife's income share	–	–	0.37	–	–
Budget Shares					
Food	0.36	0.43	0.39	–	–
Clothing	0.10	0.07	0.07	–	–
Housing	0.20	0.17	0.14	–	–
Daily necessities	0.09	0.12	0.13	–	–
Medical care	0.04	0.03	0.07	–	–
Transportation & Communication	0.09	0.11	0.11	–	–
Education & Entertainment	0.08	0.06	0.06	–	–
Other	0.04	0.02	0.02	–	–
Demographics					
Urban residence	0.74	0.65	–	0.63	0.63
Education (years)	13.35	12.15	–	7.54	6.82
Employed	0.91	0.94	–	0.92	0.79
Age	27.8	29.0	–	38.5	37.1

Notes: This table reports summary statistics for single males, single females, and married couples. Budget shares are fractions of total annual household consumption. Urban residence is a binary indicator. Education is measured in completed years. Data are from the China Family Panel Studies (CFPS).

Table 7: QUAIDS Parameter Estimates for Single Individuals

	Single Female	**Single Male**
Panel A: Constant Terms (α)		
Food	0.356***	0.439***
	(0.016)	(0.051)
Clothing	0.123***	0.079***
	(0.009)	(0.015)
Housing	0.186***	0.067*
	(0.016)	(0.038)
Daily Necessities	0.108***	0.258***
	(0.011)	(0.045)
Medical Care	0.033***	0.062***
	(0.009)	(0.018)
Transportation	0.094***	0.155***
	(0.006)	(0.020)
Entertainment	0.051***	-0.084***
	(0.011)	(0.023)
Panel B: Income Effects (β)		
Food	-0.085***	0.148***
	(0.017)	(0.038)
Clothing	-0.023**	-0.010
	(0.010)	(0.010)
Housing	0.036**	0.015
	(0.016)	(0.026)
Daily Necessities	0.027**	-0.186***
	(0.013)	(0.031)
Medical Care	0.012	-0.017
	(0.010)	(0.012)
Transportation	-0.023***	-0.008
	(0.006)	(0.014)
Entertainment	0.049***	0.072***
	(0.010)	(0.015)

Notes: Each column reports QUAIDS parameter estimates by gender for single individuals. Standard errors are in parentheses. Estimates are based on household-level budget share regressions.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Structural Estimates: Sharing Rule Parameters and Barten Scales

	Pre Two-Child Policy		**Post Two-Child Policy**	
	Estimate	Std. Error	Estimate	Std. Error
Panel A: Sharing Rule Parameters ($\boldsymbol{\theta}$)				
Constant	−1.1045	(8.9837)	0.2631	(13.6748)
Wife's Income Share	−1.6578*	(0.9224)	−0.1507	(1.3811)
Age Gap (H−W)	−0.0532	(0.0800)	−0.0135	(0.0699)
Education Gap (H−W)	0.0592	(0.0623)	−0.0817	(0.0926)
Urban_h	−0.0194	(0.8265)	−0.6961	(1.0621)
Urban_w	−0.0722	(0.8479)	0.1178	(1.0005)
Log Consumption	0.1231	(0.8871)	−0.0822	(1.3242)
Panel B: Barten Scales ($\boldsymbol{\lambda}$)				
$\text{Scale}_{\text{food}}$	1.0000	(0.0380)	0.9132	(0.0357)
$\text{Scale}_{\text{dress}}$	0.8170	(0.0908)	0.7801	(0.1024)
$\text{Scale}_{\text{house}}$	0.7342	(0.0404)	0.8297	(0.0389)
$\text{Scale}_{\text{daily}}$	0.9998	(0.0635)	0.9893	(0.0747)
$\text{Scale}_{\text{med}}$	0.9999	(0.1122)	0.9992	(0.1771)
$\text{Scale}_{\text{trco}}$	0.9997	(0.0486)	1.0000	(0.0601)
$\text{Scale}_{\text{eec}}$	0.9985	(0.0722)	0.8343	(0.0643)
$\text{Scale}_{\text{other}}$	0.7216	(0.1146)	0.7005	(0.1148)
Sargan Test for Overidentifying Restrictions				
J-statistic (p-value)	104.40	(0.2857)	117.93	(0.0730)

Notes: This table reports GMM estimates of the structural sharing rule parameters and Barten scales before and after the Two-Child Policy. Standard errors are in parentheses. The Sargan test assesses the validity of overidentifying restrictions.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Summary Statistics of Female Resource Share by Policy Period

Period	**N**	**Mean**	**Median**	**Std. Dev**	**Min**	**Max**
Overall	898	0.322	0.317	0.116	0.097	0.741
Pre-Policy	498	0.380	0.380	0.114	0.097	0.741
Post-Policy	400	0.250	0.226	0.068	0.115	0.523

Notes: This table summarizes the distribution of estimated female resource share before and after the implementation of the Two-Child Policy. Sample includes all households with one child. Red highlights indicate a notable shift in mean resource share across periods.

Figures

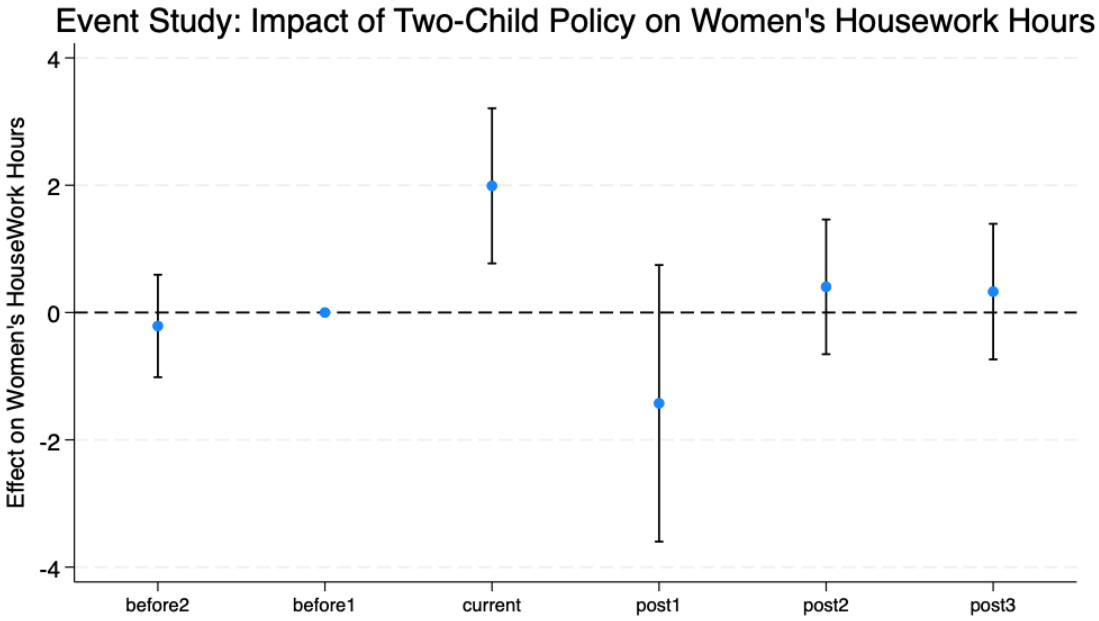


Figure 1: Parallel Trends: Women's Housework Hours

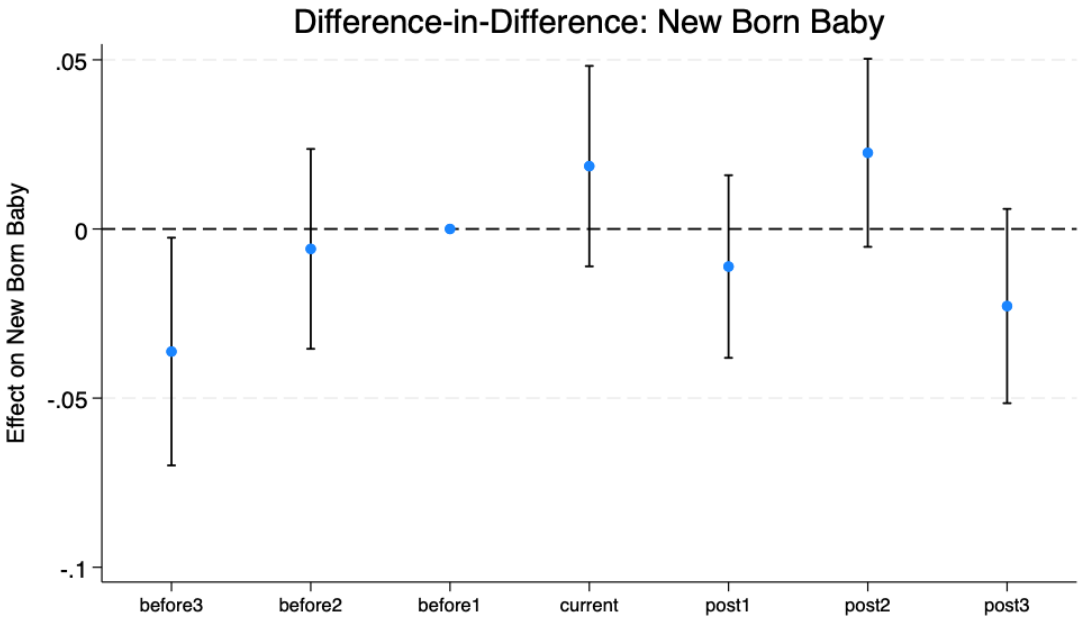


Figure 2: Parallel Trends: Number of Newborns

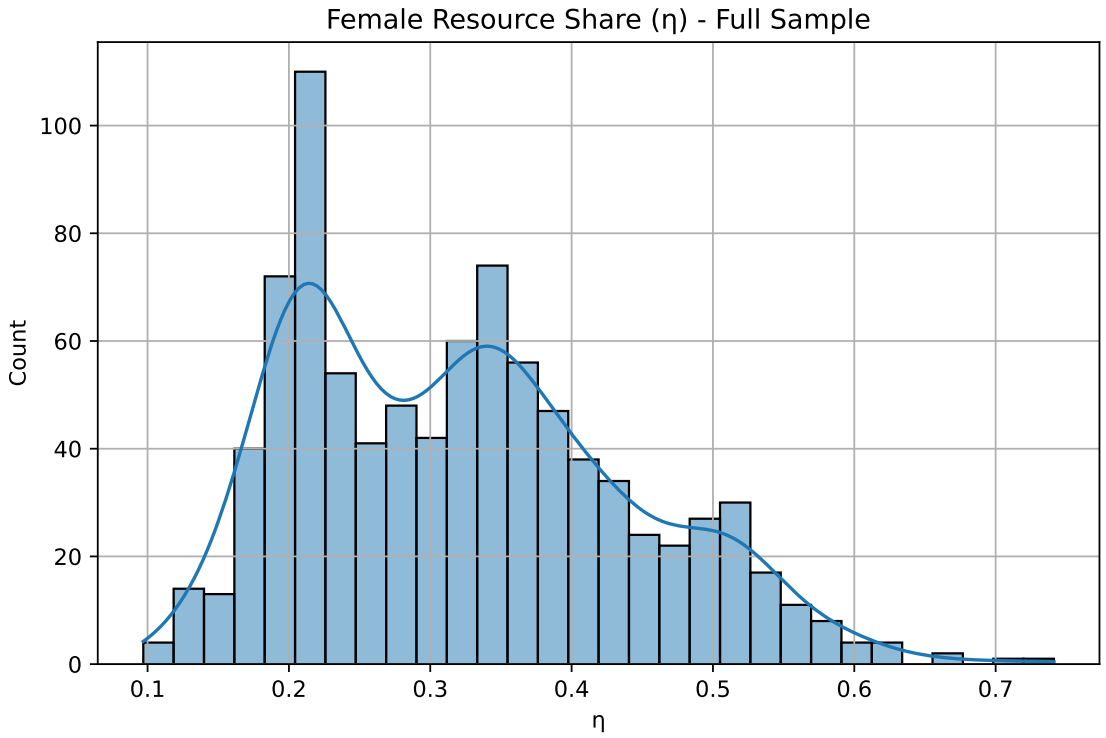


Figure 3: Distribution of Estimated Female Resource Shares

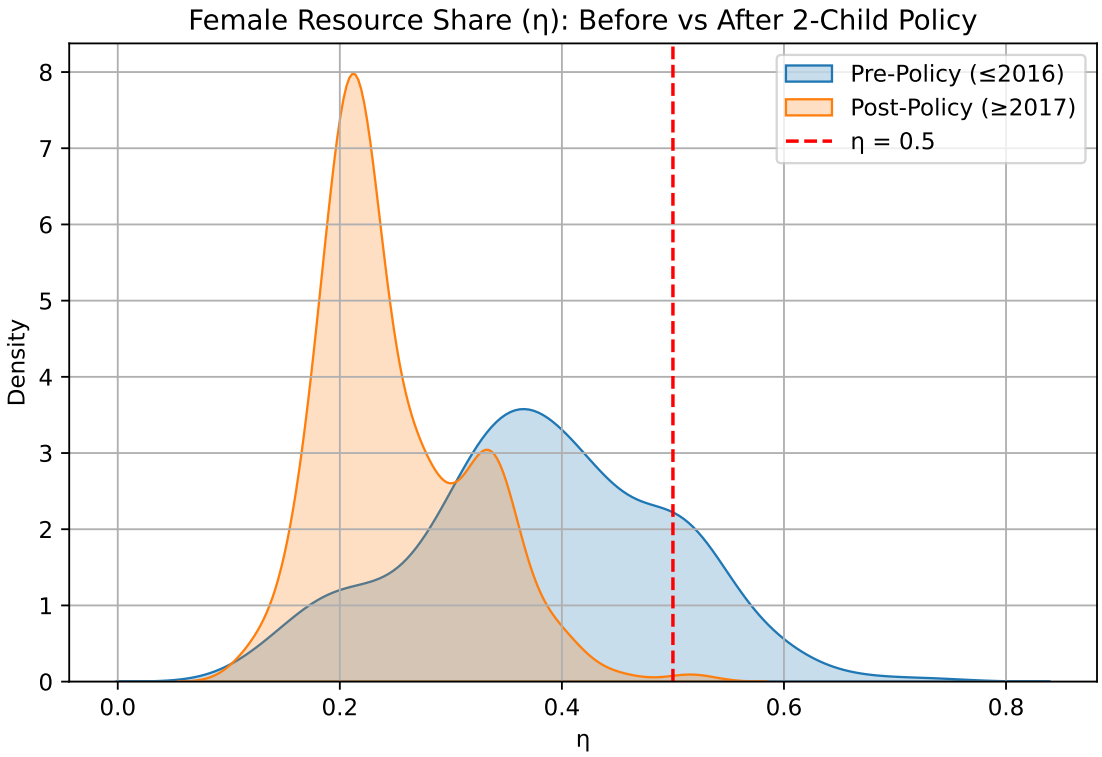


Figure 4: Female Resource Shares Before and After Two-Child Policy

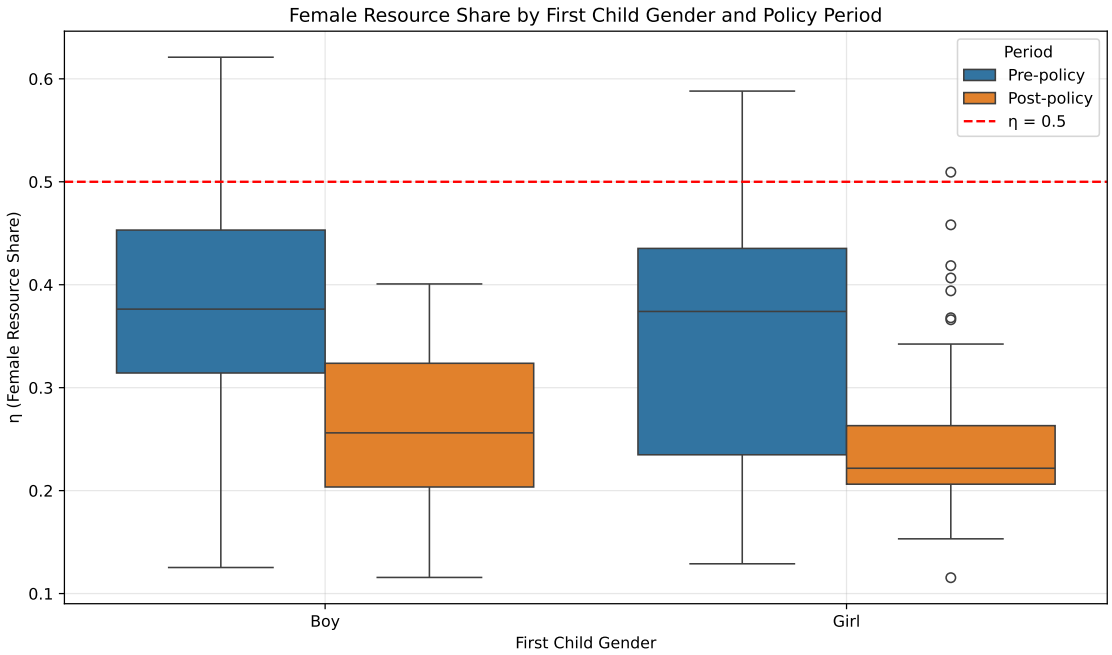


Figure 5: Heterogeneous Effects of the Policy by Firstborn Gender

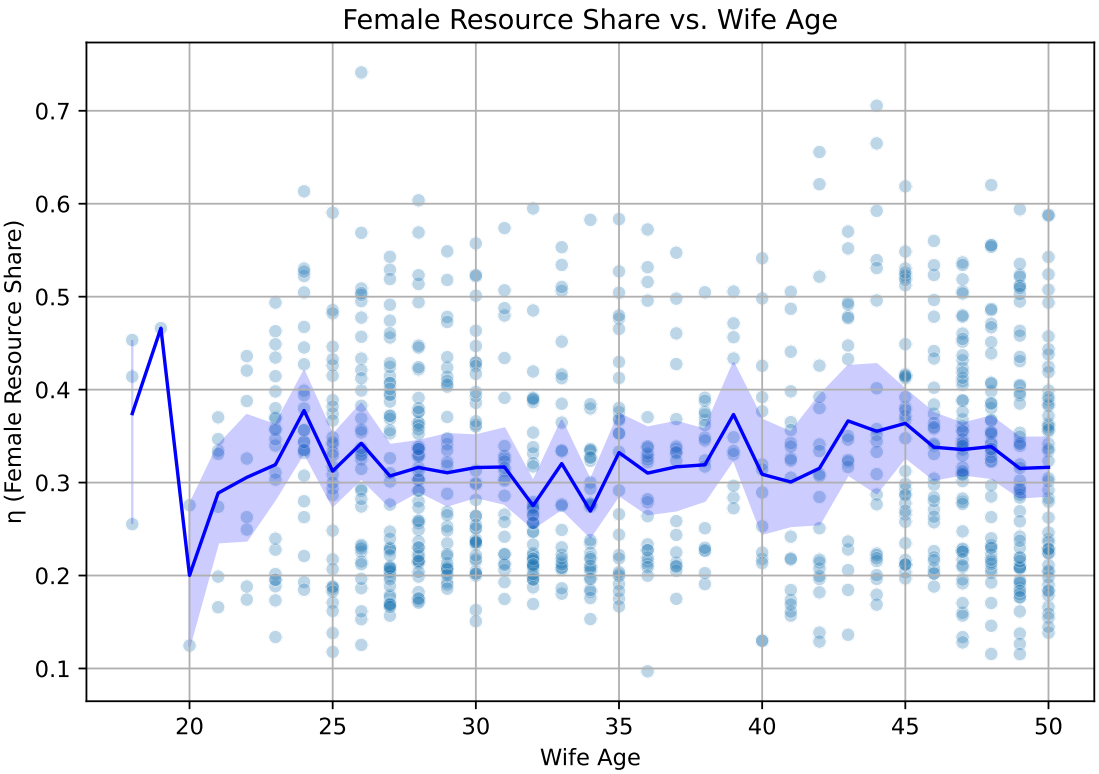


Figure 6: Female Resource Share by Wife's Age

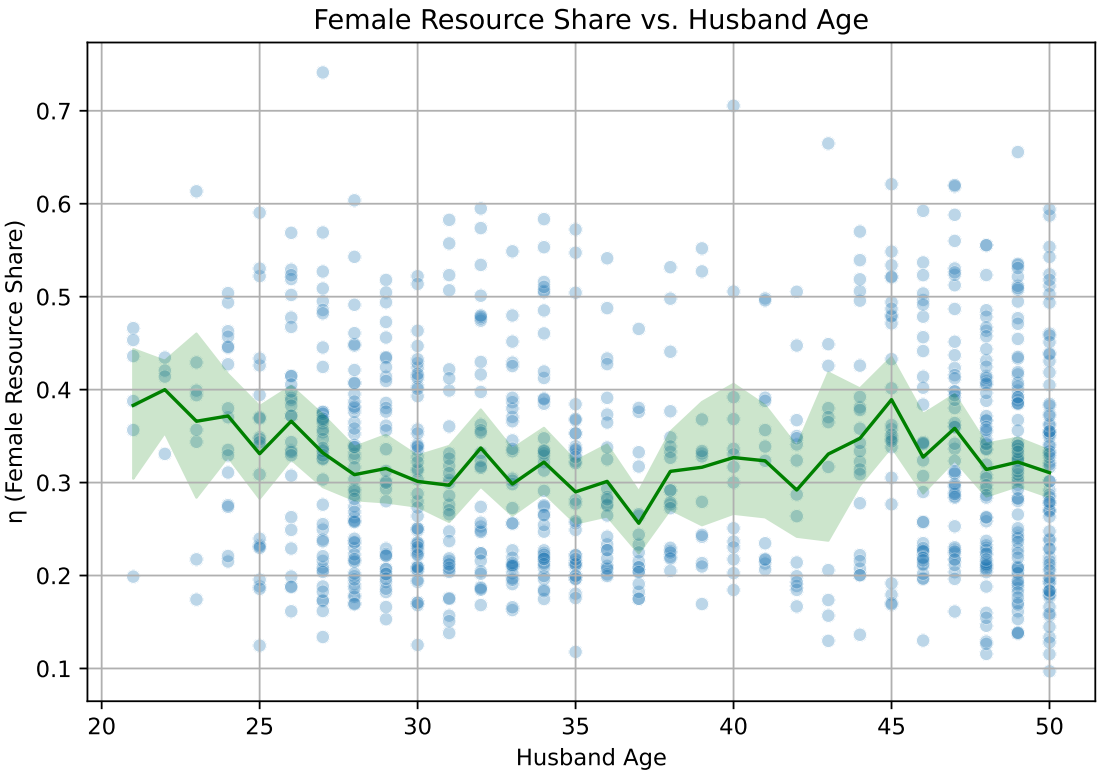


Figure 7: Female Resource Share by Husband's Age

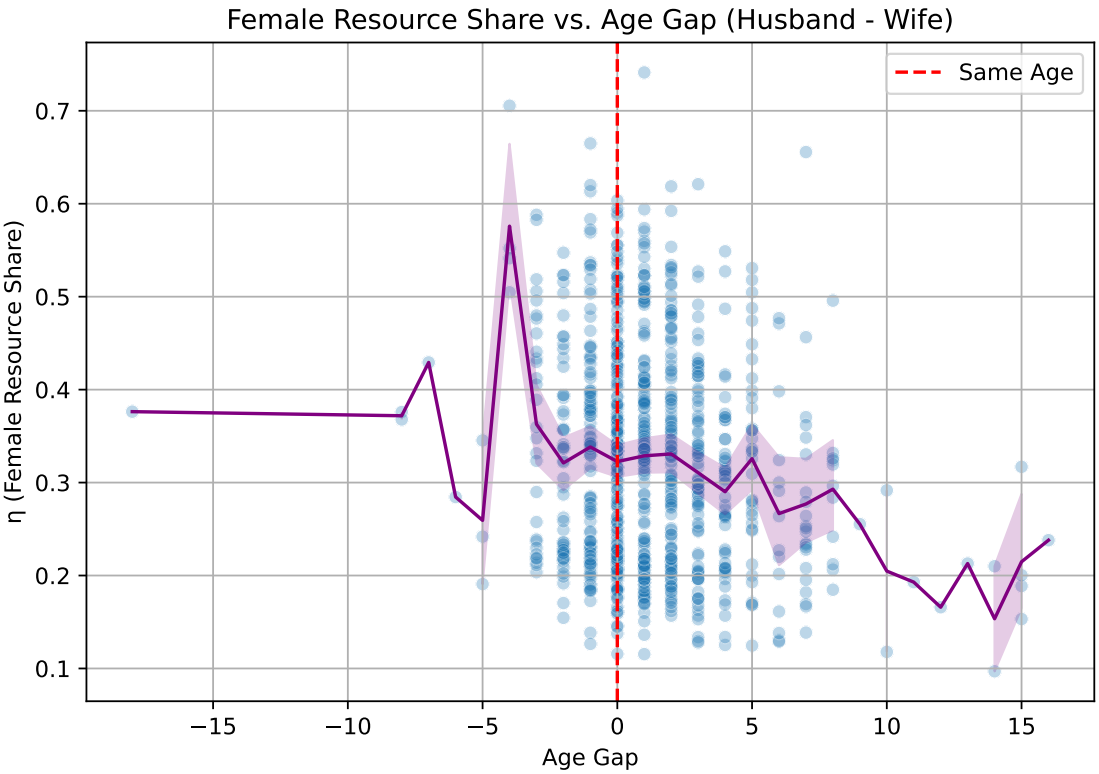


Figure 8: Female Resource Share by Age Gap (Husband - Wife)

Appendix A. Female Resource Share Distributions by Year

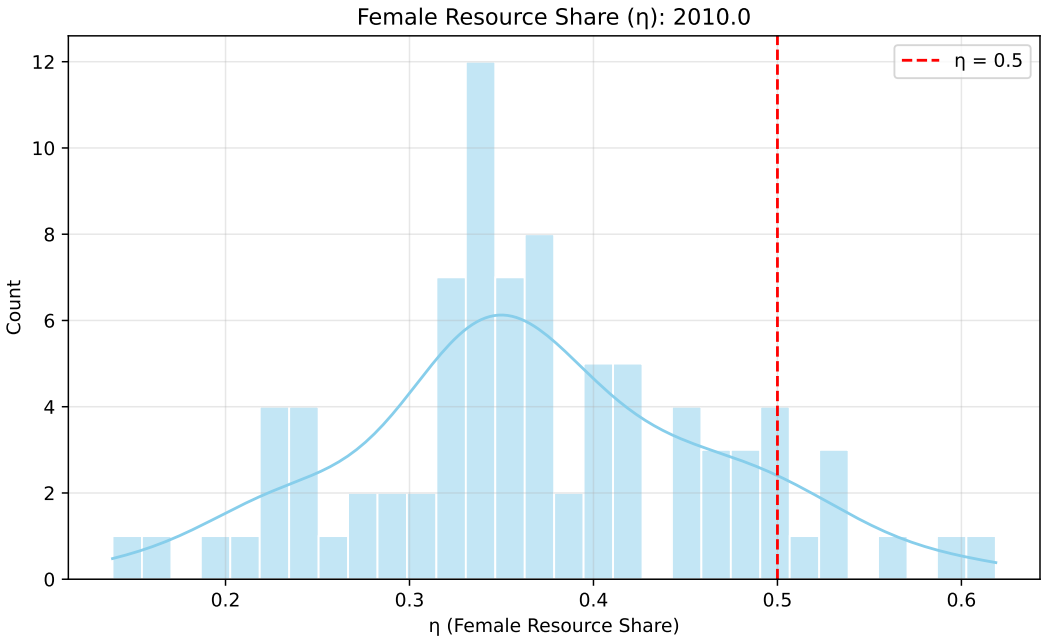


Figure 9: Female Resource Share Distribution in 2010 (Pre-policy)

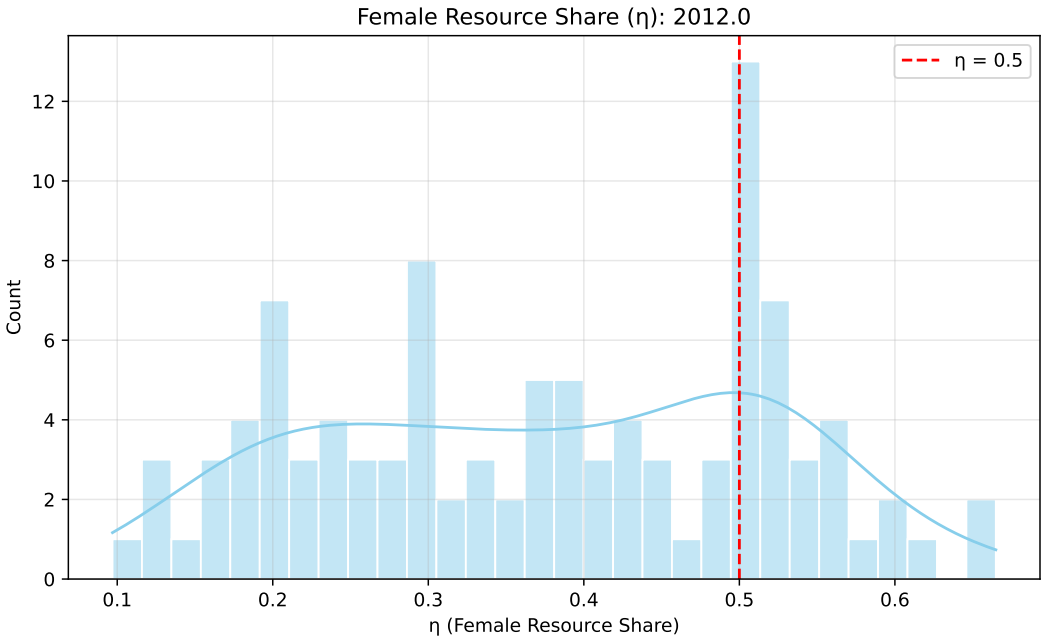


Figure 10: Female Resource Share Distribution in 2012 (Pre-policy)

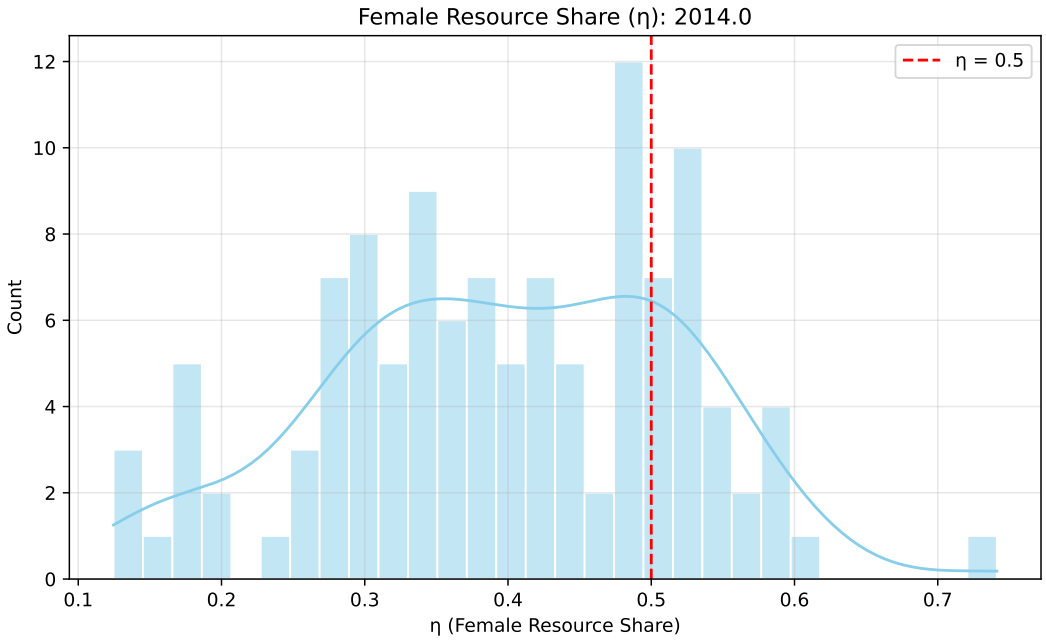


Figure 11: Female Resource Share Distribution in 2014 (Pre-policy)

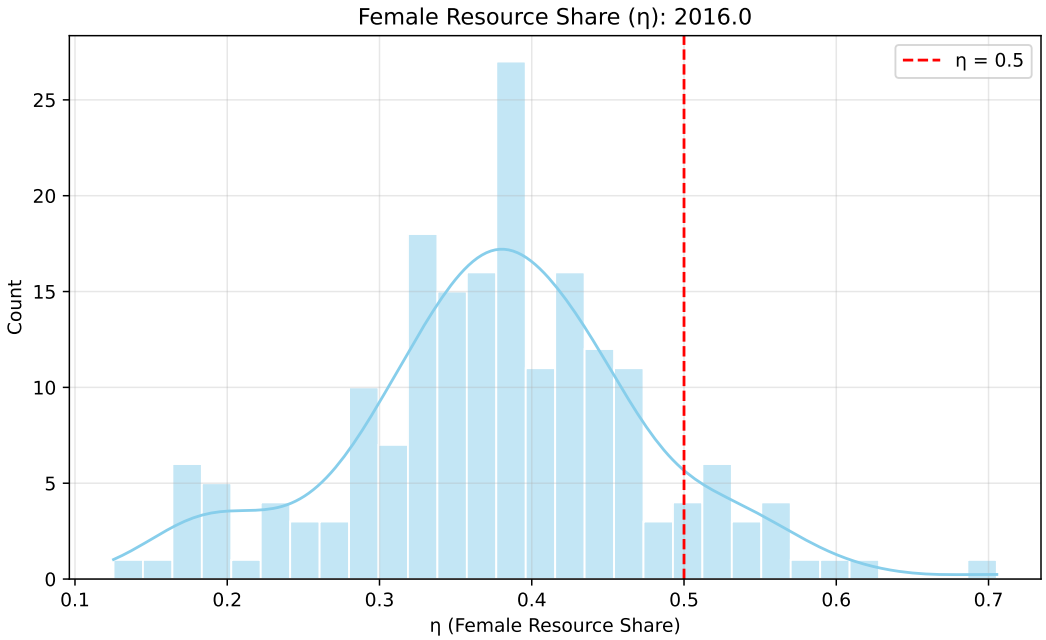


Figure 12: Female Resource Share Distribution in 2016 (Policy Year)

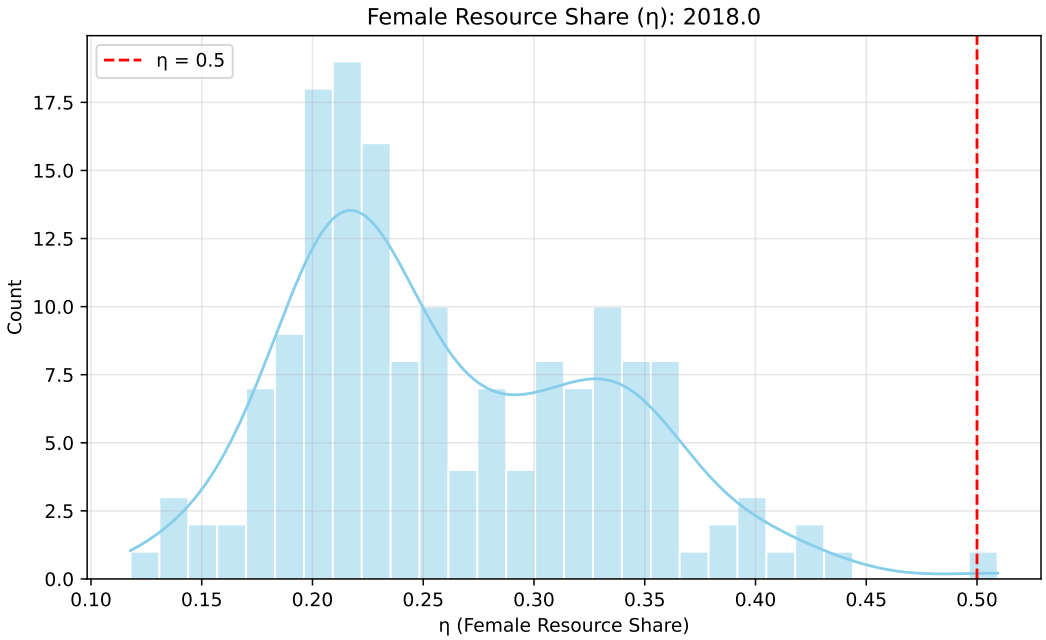


Figure 13: Female Resource Share Distribution in 2018 (Post-policy)

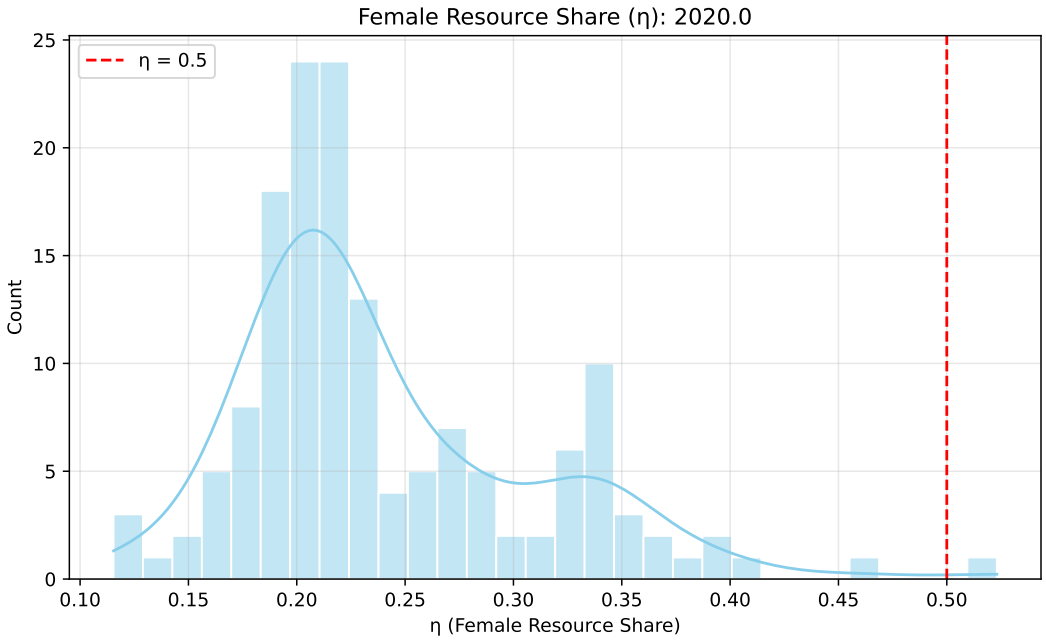


Figure 14: Female Resource Share Distribution in 2020 (Post-policy)

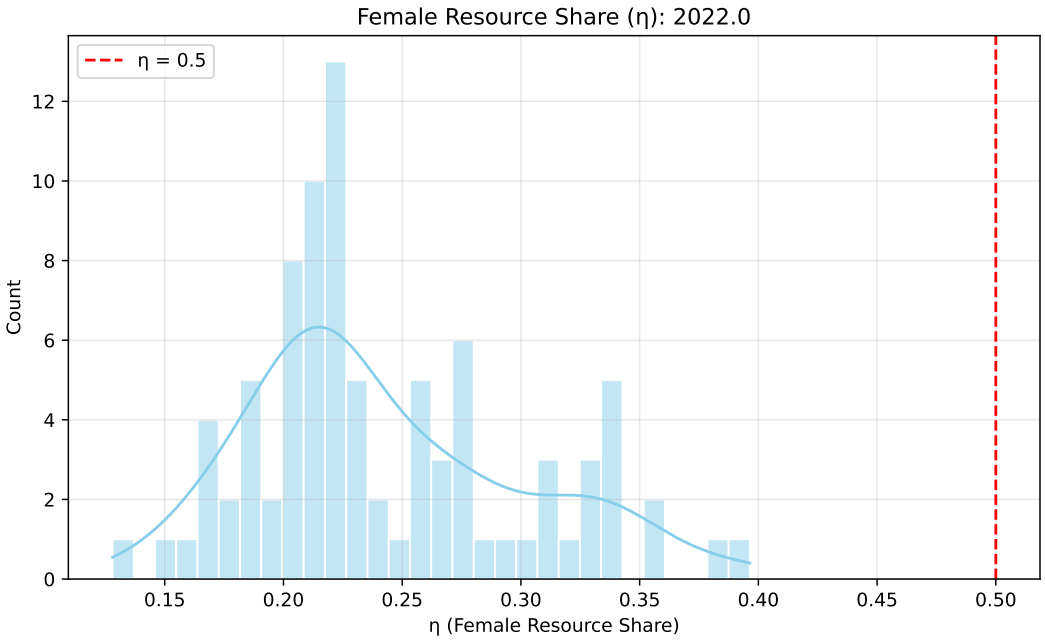


Figure 15: Female Resource Share Distribution in 2022 (Post-policy)