Household Resources and Investments in Children's Higher Education: The Role of Intra-Household Bargaining

Tung Dang*

April 2025

Abstract

This paper studies the impact of improved women's intra-household bargaining power on children's university enrollment. Using rich survey data from Indonesia and an instrumental variable approach, I construct a measure of shocks to women's outside options that is orthogonal to household resources and children's ability but strongly predictive of self-reported decision-making power among married women. I find that increases in mothers' bargaining power at the time of children's high school graduation significantly raise their likelihood of attending university. The effects are observed for both sons and daughters and are particularly pronounced among households less likely to face short-term liquidity constraints. I provide evidence that rules out alternative explanations, including endogenous changes in maternal labor supply, household formation, and local labor market conditions faced by children. Overall, the findings underscore the importance of intra-household bargaining dynamics and spousal differences in preferences for children's education in shaping how household resources are translated into investments in higher education.

JEL code: D13, I24, J16
Keywords: Household resources, Intra-household bargaining, University enrollment.

1 Introduction

Across many cultural and economic settings, children from wealthier families are more likely to pursue postsecondary education (Shavit and Blossfeld 1993; Carneiro and Heckman 2002; Björklund, Lindahl, and Plug 2006; Bulman et al. 2021). Given that a university degree often yields higher wages and other important non-pecuniary benefits (Oreopoulos and Salvanes 2011), understanding how family resources affect enrollment is central to the design of effective education policy and to understanding the intergenerational transmission of inequality. On one hand, investing in higher education can be prohibitively costly. Families may be unable to realize their children's potential due to short-term financial constraints, particularly in settings with missing or imperfect credit markets (Acemoglu and Pischke 2001; Belley and Lochner 2007; Coelli 2011; Lovenheim 2011; Bastian and Michelmore 2018; Manoli and Turner 2018). On the other hand, family resources are correlated with long-term factors such as parental preferences, ability, and access to quality schools and peers, all of which may contribute to a positive association between household wealth and educational attainment (Carneiro and Heckman 2002; Cameron and Taber 2004; Bleakley and Ferrie 2016). The effectiveness of policies aimed at improving access to higher education may therefore depend on the relative importance of these underlying mechanisms.

In this article, I explore the role of intra-household bargaining dynamics, particularly mothers' decision-making power, in shaping children's university enrollment. Recent studies show that parents within households often differ in their preferences for children's education, either due to varying levels of altruism (Dizon-Ross and Jayachandran 2023) or beliefs about returns to education (Attanasio, Boneva, and Rauh 2022). When such disagreements exist, the effects of household resources on children's education may hinge critically on who controls resources and decision-making. Indeed, a large literature has documented positive effects of female empowerment on children's educational attainment and welfare (Thomas 1990; Lundberg, Pollak, and Wales 1997; Duflo 2003; Quisumbing and Maluccio 2003; Ward-Batts 2008; Qian 2008; Majlesi 2016; Wang and Cheng 2021), though it remains unclear whether these findings are empirically relevant in the

context of higher education investments.

To address this question, I analyze a combination of household and labor force survey data from Indonesia, a setting where the gender wage gap has narrowed substantially over the past few decades. As Figure 1 shows, women's median hourly earnings in Indonesia grew from about 55% of men's earnings in 1990 to 80% in 2014. Standard Nash bargaining models predict that such convergence improves women's outside options and, in turn, strengthens their intra-household decision-making power (Manser and Brown 1980; McElroy and Horney 1981; Lundberg and Pollak 1993).[1] My analysis thus focuses on changes in women's earnings potential, predicted by Bartik-style instruments, as a source of variation in decision-making power, and relates these to changes in couples' self-reported decision-making and children's enrollment in postsecondary education. Figure 2 shows some prima facie evidence of the effects of strengthened female bargaining power on children's enrollment. Concurrent with the significant decline in the gender wage gap, the proportion of young adults (aged 22-30) who have obtained a bachelor's degree also rose dramatically from about 1% in 1990 to 9% in 2014. Importantly, this trend is observed among both men and women, suggesting that factors beyond potential changes in the returns to or opportunity costs of pursuing postsecondary education for women are driving the surge in educational attainment.

I begin the empirical analysis by estimating the effect of changes in women's relative potential earnings on their decision-making authority within households. Accounting for both observed characteristics and unobserved heterogeneity through household and district fixed effects, I find that positive shocks to women's outside options significantly increase their decision-making power, particularly over children's education. Consistent with the theory that bargaining power depends on threat-point utility rather than realized earnings, these effects are observed for both working and non-working women (Pollak 2005; Aizer 2010; Majlesi 2016).

Having established that changes in women's labor market conditions translate into greater decision-making authority, I then examine whether these shifts influence children's university en-

---

[1] A well-established body of empirical studies supports these predictions. See, for example, Anderson and Eswaran (2009), Aizer (2010), Majlesi (2016), Doepke and Kindermann (2019), and Zhao and Qu (2024).

rollment. My main analysis focuses on mothers' relative potential earnings at the time children graduate from high school. This timing is crucial for two reasons. First, while increases in mothers' bargaining power in earlier periods may result in important early human capital investments that foster children's university preparedness, final enrollment decisions may still be vetoed if mothers' authority is temporary and committment is imperfect (Mazzocco 2007; Lise and Yamada 2019). Second, children from resource-constrained families may especially benefit from additional cash-on-hand to cover the upfront costs of higher education at the time of enrollment (Coelli 2011; Lovenheim 2011; Manoli and Turner 2018). Consistent with these predictions, I find that increases in mothers' relative potential earnings at age 17 significantly raise the probability of university enrollment. This effect is significant for both sons and daughters, and particularly pronounced in households less likely to face short-term budget constraints.

I provide several pieces of evidence to rule out alternative explanations. First, the spouse-specific instruments used to predict each parent's potential earnings do not predict the earnings of the opposite spouse, helping to eliminate concerns about household-level or provincial labor market shocks. Second, balance tests show that mothers' relative potential earnings are uncorrelated with key determinants of children's university preparedness, including household resources, high school quality, height, and a measure of cognitive ability. Third, estimates using mothers' relative potential earnings measured in years before or after the child turns 17 are small and statistically insignificant. This timing pattern reinforces the notion that the observed effects on children's enrollment reflect decision-making dynamics at the point of university entry, as opposed to gradual changes in household or long-run labor market conditions. Finally, my results are robust to maternal employment status, supporting the interpretation that outside options, rather than endogenous labor supply or income adjustments, drive the observed effects.

My findings contribute to several strands of literature. First, while an extensive literature has examined the various pathways through which household resources determine participation in higher education, little consensus on the exact mechanism at play has been reached (e.g., Carneiro and Heckman 2002; Belley and Lochner 2007; Løken 2010; Lovenheim 2011; Manoli and Turner

2018; Bulman et al. 2021). My results suggest that disagreements between parents regarding how much to invest in children's university education likely exist, and that the intra-household distribution of parents' bargaining power is a crucial determinant of the extent to which household resources translate into investments. This insight provides a nuanced understanding of the role of household resource constraints in limiting higher education access: relaxing these constraints requires not only increasing total household resources but also ensuring that a greater share is controlled by the parent more committed to investing in children's education.

Second, my paper also relates to the broader literature on the determinants of the intergenerational transmission of economic outcomes (Björklund and Salvanes 2011; Black and Devereux 2011, Alesina et al. 2021; Attanasio, Cattan, and Meghir 2022). My results indicate that factors influencing parents' bargaining power, such as shocks to their relative labor market conditions, may drive disparities in educational and labor market outcomes among otherwise similar children.

Lastly, my findings contribute to broad literature that has documented the limitations of unitary models in explaining household behaviors, including saving, investment, and consumption decisions (e.g., Alderman et al. 1995; Lundberg, Pollak, and Wales 1997; Duflo 2003; Ward-Batts 2008; Attanasio and Lechene 2014; Addoum 2017; Schaner 2017; Doepke and Kindermann 2019; Calvi 2020; Zhao and Qu 2024). I identify children's higher education as another domain where substantial heterogeneity in household members' preferences may exist. In addition, the results emphasize the critical role of labor market conditions and potential earnings in shaping spousal outside options and bargaining power within the household. This aligns with research on gender gaps in labor market outcomes and their effects on household dynamics, where reducing gender inequalities has been linked to better developmental outcomes, such as improvements in children's health and well-being (Qian 2008; Duflo 2012; Heath and Mobarak 2015; Wang and Cheng 2021; Zhao and Qu 2024). This paper extends this literature by identifying children's later-life outcomes as an additional pathway through which addressing gender inequality may have far-reaching consequences for economic mobility and human capital formation.

The remainder of the paper is organized as follows. Section 2 describes the data and key

variable definitions. Section 3 outlines my empirical strategy, including a shift-share instrumental variable estimation approach. Section 4 presents the results. Section 5 concludes.

2   Data

My empirical investigation combines individual- and household-level data from the Indonesian Family Life Survey (IFLS) with labor force survey data from the Indonesian Labor Force Survey (SAKERNAS). In this section, I provide a brief overview of the data sources and key variables used throughout my main analysis.

2.1   Indonesian Family Life Survey

The primary data source used in this paper is the IFLS, a longitudinal household survey first conducted in 1993 by the RAND Corporation in collaboration with the University of Indonesia. The initial sample includes over 7,200 households, designed to represent 13 provinces in Indonesia (about 83% of the Indonesian population) at the time. Subsequent waves of the survey were conducted in 1997, 2000, 2007, and 2014, which collected data on all original households as well as newly formed households that included original members.[2] The rich content of the IFLS makes it particularly suited for my analysis. The dataset contains information on individuals' educational outcomes, along with a broad set of individual, parent, and household characteristics that allows me to control for important factors influencing the likelihood of pursuing higher education. Furthermore, beginning in 1997, the IFLS added a survey module that tracks how households make decisions regarding expenditures and time use. In households with married couples, self-reported data on which members participate in decision-making across different domains are collected from both husbands and wives. As discussed in the next section, these data enable me to empirically establish the crucial first-stage relationship between changes in spouses' outside options and intra-

---

[2]For more information on the IFLS, see http://www.rand.org/labor/FLS/IFLS/.

household bargaining power, as reflected by observed shifts in the identities of the decision-makers within households over time.

To analyze the impact of changes in parents' relative decision-making power on children's participation in higher education, I focus on analyzing the educational outcomes of individuals who had completed senior high school as of 2014 (IFLS-4). I restrict my sample to those aged 18 to 39, for whom parental earnings and household wealth during their adolescent years are observable. The primary outcome analyzed is whether individuals reported having enrolled in a 4-year university in IFLS-4. I focus on enrollment instead of completion, since enrollment better reflects household demand for education, while completion may depend on factors unrelated to parents' investment decisions (Light and Strayer 2000; Bound, Lovenheim, and Turner 2010).

In addition to educational outcomes, I also use the IFLS to construct a large set of controls for background characteristics. These include basic demographic characteristics such as age, sex, and ethnicity; height; the type of school attended at the primary, junior, and senior high levels; and key parental characteristics, including age, years of formal education, and income. I also control for number of siblings, household assets and the district of the individual's residence. Summary statistics for the main sample of my analysis, which contains 4,385 individuals, are provided in Appendix Table 1.

One limitation of the IFLS is the significant time gap between survey waves, which means that some key time-varying characteristics, such as parental income and household assets, cannot be observed at the same age for all individuals (e.g., at the time of high school graduation). To address this, I use data from the most recent survey wave available before an individual turns 18 to construct these controls. Although these controls are not measured at the same exact age for all individuals, this does not appear to significantly undermine my estimation. As discussed in the next section, I rely on labor demand shocks specific to parents' demographic groups, combined with a shift-share instrumental variable, to predict changes in parents' decision-making power. This approach mitigates omitted variable bias related to unobserved household and individual factors. As I demonstrate later in the paper, the variation in maternal bargaining power predicted by the

instrument appears uncorrelated with the household and individual characteristics that are key determinants of university enrollment. Moreover, my point estimates remain stable when accounting for time-varying household and individual controls.

2.2 SAKERNAS

I use data from the 1990-2014 Indonesian Labor Force Survey (SAKERNAS) to measure changes in parents' relative labor market conditions and to construct a shift-share instrument. The key information drawn from SAKERNAS is the average hourly wage in the formal sector at the province-demographic-group level. Hourly wage is computed by dividing total monthly earnings by the total hours worked times 4.3. Additionally, I use SAKERNAS to construct time-varying controls for local labor market conditions individuals face when graduating senior high school (at age 17). These include the province-level unemployment rate for individuals aged 15 to 21 without a university degree, the share of workers with a university degree, and the female labor force participation rate.

3   Methodology

3.1   Measuring outside options

As mentioned above, the gender wage gap in Indonesia narrowed substantially between 1990 and 2014 (Figure 1). As a result, a large fraction of married couples would have likely experienced improvements in relative labor market conditions in favor of the wife during this period. Standard Nash bargaining models of household decision-making predict that these improvements raise the maximal level of utility women can attain at their threat points, either in the event of a divorce (Manser and Brown 1980; McElroy and Horney 1981) or in a non-cooperative equilibrium internal to a marriage (Lundberg and Pollak 1993), as couples bargain over the allocation of household

7

resources. Consequently, better outside options enable women to exert more decision-making power, leading to bargaining outcomes that better reflect their preferences. A substantial body of empirical research has documented such effects, linking improvements in women's relative labor market conditions to increased private consumption (Anderson and Eswaran 2009; Zhao and Qu 2024), greater household expenditure on children (Wang and Cheng 2021), improvements in child survivability and early educational outcomes (Qian 2008; Zhao and Qu 2024), and reductions in domestic violence (Aizer 2010).

To examine whether intrahousehold bargaining dynamics affect children's participation in higher education, I focus on parents' potential earnings, constructed from market wage rates, as a determinant of their decision-making power. While actual earnings may have improved as the gender wage gap narrowed, they reflect equilibrium outcomes that depend on household labour supply decisions and may not capture spouses' threat-point utilities. In contrast, potential earnings based on market wages are exogenous to household choices and more directly capture outside options relevant for bargaining (Pollak 2005).

To construct potential earnings, I first assign each parent to a demographic group defined by age, gender, education level, and province of residence.[3] Potential earnings are then calculated as the average hourly wage of formal-sector workers with the same characteristics, using data from the SAKERNAS labour force survey. The key explanatory variable in my analysis, individual i's mother's relative potential earnings, is calculated by dividing the mother's potential earnings by the sum of both parents' potential earnings.

$$(1) \qquad \text{mother's rel. pot. earnings}_i = \frac{\text{mother's pot. earnings}_i}{\text{father's pot. earnings}_i + \text{mother's pot. earnings}_i}$$

A priori, it is not obvious when parents' relative potential earnings should be measured. I focus on measuring parents' decision-making power at the time most individuals graduate from senior high school (i.e., at age 17). I choose this timing for two main reasons. First, existing evidence

---

[3]I use 5-year age intervals ranging from 26 to 55 and five educational categories: no schooling, primary school, junior high school, senior high school, and bachelor's degree or above.

suggests that families and students often finalise university enrollment decisions during the final year of high school, such that changes in cash-on-hand can significantly affect those decisions (Manoli and Turner 2018). Second, and more importantly, household bargaining may occur without perfect commitment (Mazzocco 2007; Lise and Yamada 2019). As a result, changes in outside options may trigger renegotiations over whether—and how much—to invest in children's higher education. Nonetheless, in some specifications, I report estimates based on measures of parents' decision-making power before and after age 17. These alternative timings allow me to explore dynamic effects and assess the validity of my instrumental variable strategy, which I describe later in the section.

Figure 3 plots the evolution of average mothers' relative potential earnings across child cohorts. As expected, given the observed narrowing of the gender wage gap over this period, later cohorts experienced notable improvements in mothers' potential earnings relative to fathers'. Comparing the earliest and latest cohorts in my sample, mothers' average relative potential earnings increased by 5 percentage points, from 0.35 to 0.40, representing a 14 percent gain over the period. This substantial cross-cohort variation, combined with spatial differences in local labour demand shocks, forms the basis for my identification strategy, which exploits variation in mothers' relative potential earnings across both time and space.

3.2   Estimation

Building on this variation, I estimate the following regression equation to assess the role of intra-household bargaining power in shaping children's university enrollment decisions,

$$
\text{university enrollment}_i = \beta_1 \text{mother's rel. pot. earnings}_i + \beta_2 \text{parents' total pot. earnings}_i
$$
$$
+ \Gamma' X_i + \gamma_d + \theta_c + \epsilon_i
$$
(2)

where the outcome variable is a binary indicator equal to 1 if individual i reports having enrolled in a university (as recorded in IFLS-4), and 0 otherwise. The key independent variable is the mother's

9

relative potential earnings, measured at age 17, as defined earlier. In estimating β_1, I control for both parents' combined potential earnings to capture the joint influence of each parent's potential earnings on the household budget constraint. This allows me to isolate the relative bargaining channel, represented by mothers' relative potential earnings, from the aggregate resource channel associated with total potential earnings. The specification also include district (γ_d) and cohort (θ_c) fixed effects, which control for local time-invariant characteristics as well as common cohort-level factors, such as changes in policy, economic conditions, and preferences, that affect individuals turning 17 in the same year.[4]

The vector X_i include a rich set of individual, parent, household, and local characteristics. Individual characteristics include sex, ethnicity, number of siblings, height, and type of school attended at the primary, junior high, and senior high levels (public religious, private non-religious, and private religious).[5] Parent characteristics include each parent's age dummies, years of education, and combined inflation-adjusted earnings. I also control for household assets, which have been shown to affect higher education enrolment beyond income (Lovenheim 2011), and province-level labour market conditions as described earlier.

Given this setup, identification of the key coefficient, β_1, relies on temporal variations in mothers' relative potential earnings among individuals with similar parental characteristics residing in the same geographic area. OLS estimates, however, may still be biased due to unobserved time-varying factors. For instance, shifts in marriage patterns could simultaneously influence women's relative potential earnings and household preferences for children's education. Additionally, provinces with faster convergence of the gender wage gap typically started with larger initial gender disparities, likely reflecting persistent traditional gender norms (Appendix Figure 1 illustrates this negative correlation). Such norms could inhibit women's ability to convert improved outside options into actual household decision-making authority, creating downward bias in OLS

---

[4]District fixed effects capture local characteristics at a more granular level than province fixed effects. Moreover, with 187 districts in my sample, I can cluster standard errors at the district level to account for potential correlated shocks within geographic areas and avoid concerns with small cluster counts.

[5]Height is a proxy for early-life health and cognitive ability and has been shown to predict labour market outcomes (Case and Paxson 2008). Newhouse and Beegle (2006) find that school type significantly influences academic achievement in Indonesia.

estimates (Doss 2013). Lastly, regions experiencing rapid gender wage convergence might systematically differ in educational quality, local attitudes toward higher education, or labor market dynamics. Indeed, changes in local labor market conditions could independently influence both opportunity costs and perceived returns to higher education, affecting educational decisions through channels unrelated to bargaining dynamics. The direction of bias in this case can be ambiguous: relative improvements in mothers' labor market conditions may signify higher returns to higher education (resulting in upward bias) or higher opportunity costs of university attendance (resulting in downward bias), depending on whether the increase in demand is for skilled or unskilled female workers.

To address these empirical challenges, I follow the recent intra-household bargaining literature and use weighted averages of national industry-specific wages as instruments to predict spouses' potential earnings (Aizer 2010; Bertrand, Kamenica, and Pan 2015; Majlesi 2016; Shenhav 2021; Bergvall 2024). This approach builds on the notion that men and women frequently work in different industries, leading aggregate industry-level changes in labor demand to differentially impact their earnings potential based on local industry compositions. In Indonesia, for example, men historically dominated industries such as mining, utilities, construction, and transportation, where they accounted for the vast majority of employment. In contrast, industries such as agriculture, manufacturing, retail, and services exhibit comparatively better female representation.

Formally, I construct the following instrument for each spouse as follows

$$(3) \qquad \hat{w}_{aept}^{g} = \sum_{k} \gamma_{p,1990}^{g,k} \times w_{aet,-p}^{g,k}$$

where g indexes gender, a age, e education, p province, t year, and k industry. The shift component, $w_{aet,-p}^{g,k}$, is the average hourly wage in industry k at the national level (excluding province p) for workers of a given gender, age, and education group. The exposure share, $\gamma_{p,1990}^{g,k}$, measures the fraction of workers of gender g in province p who were formally employed (as wage earners) in industry k as of 1990. This construction thus departs from the canonical Bartik setup by capturing

11

not only local industry compositions (i.e., the distribution of total employment across industries) but also the relative size of the formal sector within each industry. This focus on formal-sector employment is particularly relevant to the Indonesian context, where informal work, especially in agriculture and small-scale retail, serves as a buffer against economic shocks (Fernández and Meza 2015; McCaig and Pavcnik 2018; Dix-Carneiro and Kovak 2019). By restricting attention to formal employment, the instruments more accurately reflect changes in spouses' earnings potential, thereby improving the strength and interpretability of the first-stage relationship.[6]

Following this construction, I treat both mother's relative potential earnings and parents' combined potential earnings in equation 2 as endogenous, and predict them jointly using spouse-specific instruments. Table 1 reports the first-stage relationships, estimated on the main sample used throughout my empirical analysis. Column 1 shows that both the father's and mother's instruments are strongly correlated with parents' combined potential earnings. Column 2 reveals that these two instruments shift relative potential earnings in opposite directions: the father's instrument is negatively correlated with the mother's relative potential earnings, while the mother's instrument is positively correlated. These relationships are both sizable and precisely estimated, indicating strong first-stage predictive power. In columns 3 and 4, I further test whether each instrument predicts the potential earnings of the opposite spouse. This helps addressing the concern that my instruments might capture confounding household or local factors, such as common labor market shocks faced by household members (Autor, Dorn, and Hanson 2019; Shenhav 2021). Reassuringly, the results indicate no significant cross-effects, suggesting that each instrument isolates variation specific to the targeted spouse's demographic group rather than broader household or provincial influences.

Recent studies have outlined the conditions under which shift-share designs can yield causal estimates, particularly when the exclusion restriction is satisfied through either quasi-random exposure shares (Goldsmith-Pinkham, Sorkin, and Swift 2020) or quasi-random shocks (Borusyak, Hull, and Jaravel 2022). In Appendix Table 2, I report the Rotemberg weights derived using the

---

[6]My results are quanlitatively similar when using a traditional Bartik-style instrument, and are available upon request.

method in Goldsmith-Pinkham, Sorkin, and Swift (2020), which quantify the contribution of each industry to the identification of mother's relative potential earnings through the two instruments. These weights show that agriculture and mining are the two most influential sectors driving identification. As shown in the next section, my point estimates are robust to excluding either industry from the calculation of potential earnings and the construction of the instruments, suggesting that unobserved shocks specific to these sectors are unlikely to be driving the results.

In line with the guidance from recent literature, I also conduct a series of balance and falsification tests to assess the validity of the identification strategy. These tests examine whether the predicted variation in mother's relative potential earnings is correlated with pre-determined household and individual characteristics, and whether mother's bargaining power, when measured before or after the period when enrollment decisions are typically made, predicts children's university enrollment. As discussed in the following section, the results of these tests provide strong support for the credibility of my empirical approach.

4 Results

4.1 Spouses' outside options and self-reported household decision-making

I begin by assessing the impact of changes in women's outside options on their involvement in household decision-making in Indonesia. Establishing this first-order relationship is important, given that bargaining power is inherently unobservable and that women's relative potential earnings might influence household resource allocation through mechanisms unrelated to bargaining dynamics. Moreover, prior research suggests that improvements in outside options can translate into increased decision-making power in some domains but not others, raising the possibility that children's educational outcomes may remain unaffected despite underlying shifts in mothers' decision-making authority. For example, Majlesi (2016) analyzes similar household decision-making data and finds no significant relationship between changes in women's relative labor market conditions

and their control over education decisions in Mexico.

To measure spousal involvement, I take advantage of the household decision-making module introduced in the second wave of the IFLS. Among married couples, both husbands and wives are asked to report who makes decisions across a wide range of domains.[7] Using responses from both spouses, I construct binary outcomes indicating whether the responding spouse reports being the sole decision-maker in each domain and regress these on the wife's relative potential earnings, measured in the same survey year. I exploit the panel structure of the data and control for both district and household fixed effects, which fully account for unobserve local time-invariant characteristics and residential sorting across locations.[8]

Table 2 reports the estimated effects of women's relative potential earnings on household decision-making regarding children's education. Columns 1–3 focus on women's self-reports of whether they have sole authority. The OLS estimate in column 1 suggests that a 10 percentage point increase in the wife's relative potential earnings is associated with a 1.8 percentage point increase in the probability that she alone decides on children's education. While this effect is statistically significant, it is modest in magnitude relative to the outcome mean (0.16). As noted earlier, however, OLS estimates may be attenuated due to measurement error or confounding from unobserved household characteristics, local labor market conditions, or cultural norms that jointly influence both outside options and household preferences. In line with these concerns, the IV estimate in column 2 is substantially larger: a 10-point increase in relative potential earnings raises the likelihood of sole decision-making by 4.7 percentage points. This effect represents a 29 percent increase over the mean and is significant at the 5 percent level.

In column 3, I explore whether the relationship varies by the wife's employment status by interacting relative potential earnings with an indicator for whether the wife is working. As dis-

---

[7]These include decisions regarding food consumption; routine and large purchases; clothes (for self, spouse, and children); children's education and health; money given to family and spouse's family; gifts for parties or weddings; savings; labor supply; time use; and the use of contraception.

[8]Specifically, I estimate the following equation: decision-making authority$_{i,t}$ = $\beta_1$wife's rel. pot. earnings$_{i,t}$ + $\beta_2$couples' total pot. earnings$_{i,t}\Gamma X'_{i,t}$ + γ_d + μ_i + θ_t + $\epsilon_{i,t}$, where t denotes survey year (1997, 2000, 2007, 2014), γ_d district fixed effects, μ_i household fixed effects, θ_t survey year fixed effects, and $X_{i,t}$ a vector of covariates including spouses' combined potential earnings (predicted), each spouse's age (dummies) and years of schooling, wife's working status, log household income and assets, and the number of children.

cussed above, bargaining theories predict that it is the outside option, rather than realized earnings observed in equilibrium, that shapes bargaining power. This implies that improvements in relative potential earnings should increase involvement in household decision-making among both working and non-working women. Consistent with this prediction, the estimated effects are similarly large and statistically significant for both employed and non-employed wives. A 10 percentage point increase in relative potential earnings is associated with a 4.5 percentage point increase in sole decision-making among non-working wives, and a 4.8 point increase among working wives.

Turning to columns 4-6, I assess whether these results are robust to using husbands' self-reports as to whether they have sole authority over children's education. Existing evidence suggests that spouses' self-reports regarding household decision-making may not always align due to differences in perception, interpretation, or strategic reporting (e.g., see the literature discussed in Liaqat et al. 2021). Reassuringly, while OLS estimate (column 4) is not distinguishable from zero, corresponding IV estimates (columns 5 and 6) indicate a negative and statistically significant effect of the wife's relative potential earnings on the likelihood that the husband decides children's education. Notably, the magnitudes of these effects are comparable to those observed in columns 2 and 3.

In Appendix Figure 2, I report the full set of results for women's self-reported decision-making authority across domains. The estimates reveal a broad strengthening of women's decision-making power, particularly for private consumption (e.g., clothing) and household savings (e.g., arisan), in addition to children's education. Appendix Figure 3 shows a corresponding reduction in husbands' reported authority over children's education and household purchases in response to increases in wives' relative potential earnings.

Overall, the evidence in this section shows that improvements in women's outside options translate into greater maternal control over educational decisions in Indonesia. This finding echoes Wang and Cheng (2021), who show that narrowing the provincial female-to-male wage gap in China led to higher household spending on children's education. Both results point to a common underlying mechanism: stronger female relative labor market opportunities increase women's bar-

gaining power, which in turn trigger a reallocation of household resources toward investments in children's human capital.

4.2   Intra-Household Bargaining and Household Investments in Children's Higher education

Having established the empirical relationship between women's outside options and their decision-making authority, particularly with respect to household investments in children's education, I now turn to the main results of the analysis. Table 3 presents estimates of the effects of mothers' relative potential earnings on children's university enrollment, obtained from estimating equation 2. The OLS estimate in column 1 suggests that, conditional on a rich set of controls for individual and household characteristics as well as local labor market conditions, mothers' relative potential earnings have no statistically significant effect on university enrollment. As discussed previously, however, OLS estimates are likely to be biased downward. Recall that in the preceding section, the OLS results understated the effect of women's potential earnings on their reported decision-making power. This attenuation could stem from measurement error in mothers' potential earnings, endogenous household formation, or unobserved local factors such as prevailing gender norms or the opportunity cost of higher education that simultaneously influence both women's outside options and children's educational outcomes. The larger IV estimate in column 2 supports this interpretation. Specifically, a 10 percentage point increase in the mother's relative potential earnings is associated with a 4.2 percentage point increase in the likelihood of university enrollment. This effect is statistically significant at the 1 percent level and economically meaningful. Given that 32 percent of high school graduates in the sample enrolled in university, a one standard deviation increase in relative potential earnings (13 percentage points) corresponds to a 5.3 percentage point rise in enrollment, or a 17 percent increase relative to the mean.

In column 3, I assess whether the impact of a change in mother's bargaining power differ by the child's gender by interacting mother's relative potential earnings with indicators for sons

16

and daughters. The obtained estimates indicate significant and statistically indistinguishable effects on university enrollment for both sons and daughters (a test of equality yields a p-value of 0.88). This result is consistent with the graphical evidence presented earlier showing similar trends in university enrollment across gender, and also with the relative absence of a son preference in Indonesia (Kevane and Levine 2000). Importantly, it also implies that the estimated effects are unlikely to reflect gender-specific shifts in the returns to or costs of higher education, further reinforcing the interpretation that increases in mothers' bargaining power raise household demand for postsecondary education irrespective of the child's gender.

4.3   Validity of empirical approach

The results presented thus far are consistent with standard household bargaining models: improvements in women's outside options enhance their decision-making authority and, in turn, increase household investment in children's higher education. In this section, I assess the robustness of these findings to alternative explanations.

I begin with a series of balance tests in which I regress pre-determined household and individual characteristics on my (instrumented) measure of mothers' relative potential earnings. If the shift-share instruments effectively isolate exogenous variation in earnings potential across demographic groups, then this measure should be uncorrelated with background characteristics determined prior to the university enrollment decision. Consistent with this, the results in Table 4 reveal no statistically significant relationship between mothers' relative potential earnings and key household or individual attributes—including parents' earnings and household assets, gender and ethnicity (being male, Javanese), or proxies for ability (attendance at public schools, height, and cognitive test scores).[9] Since these variables are among the most important predictors of educational attainment, the lack of correlation provides evidence that the estimates are not confounded

---

[9]Cognitive test scores were introduced only in the latest IFLS wave and are unavailable for about a quarter of the sample. To avoid sample attrition and concerns around "bad controls," I do not include them as covariates in the main specifications. However, including cognitive scores in auxiliary regressions yields qualitatively similar results.

by unobserved household or individual characteristics.

Next, I test for timing-related confounding by examining the effects of mothers' relative potential earnings when measured before and after the year the child turns 17, the typical age of high school completion. Under the assumption that university enrollment decisions are finalized at or around this age, one would expect that variation in bargaining power measured after age 17 should have no predictive power for enrollment. This timing-based falsification test is analogous to a placebo pre-trend test often used in difference-in-differences designs. Consistent with this logic, Table 5 shows that only bargaining power measured at age 17 is significantly associated with university enrollment. By contrast, estimates using relative potential earnings measured at earlier or later ages are small and statistically indistinguishable from zero. These results help rule out confounding from secular trends in local labor markets or family background characteristics that evolve gradually over time. To further probe this issue, I repeat the analysis for a different outcome—senior high school completion—which has been shown to be responsive to local labor market shocks (e.g., Rees and Mocan 1997; Atkin 2016). The results, presented in Appendix Table 3, again show no significant effect of maternal bargaining power, supporting the view that my instruments are not picking up unobserved shocks to children's opportunity costs of school attendance.

I also evaluate the sensitivity of the results to the specific industries driving identification. According to the Rotemberg weights reported in Appendix Table 2, agriculture and mining are the two most influential sectors in the shift-share construction of predicted earnings. In Appendix Table 4, I exclude each of these industries in turn from the construction of potential earnings and the instruments. The resulting IV estimates—3.9 percentage points when agriculture is excluded and 3.8 points when mining is excluded—are both statistically significant at the 5 percent level and remain similar in magnitude to the main estimates, indicating that no single sector is driving the results.

A remaining concern is that labor supply responses—rather than changes in bargaining power—may be responsible for the observed effects. For instance, improvements in potential earnings may

18

prompt mothers to work more, thereby increasing household income and relaxing liquidity constraints. While the IFLS does not provide continuous employment histories, I use retrospective job history data to assess whether the estimated effects vary by mothers' employment status at age 17. Table 6 presents the results. Reassuringly, the effect of mothers' relative potential earnings on university enrollment is statistically significant for both working and non-working mothers, suggesting that changes in observed labor supply are unlikely to be the primary channel. These results echo earlier findings from the decision-making analysis and further support the interpretation that shifts in bargaining power, not income per se, drive the observed changes in educational investments.

Finally, I examine whether the effects of maternal bargaining power vary by maternal education or urban residence. Maternal education may proxy for parental preferences or perceptions of returns to schooling, while urban households face different educational options, labor market opportunities, and social norms. Appendix Table 5 reports subgroup estimates, showing no statistically significant differences in effects across these dimensions. This absence of heterogeneity suggests that the relationship between mothers' bargaining power and children's university enrollment is not confined to specific household types. Instead, intra-household bargaining dynamics appear to exert a broadly relevant influence on educational investment decisions across diverse family settings.

4.4   Implications for the role of credit constraints

As discussed earlier, researchers often document a positive relationship between household resources and university enrollment across contexts, but considerable debate remains about the underlying mechanisms. A key question is whether this gradient reflects true short-term budget constraints, where households are unable to finance upfront education costs, or longer-term determinants such as preferences, school and peer quality, or parents' early investments in skill development (Carneiro and Heckman 2002). The findings presented thus far offer an insight into

19

this debate by highlighting the role of intra-household bargaining power in shaping how available resources are allocated toward children's education. Notably, the observation that mothers' decision-making power predicts university enrollment only when measured at the time of graduation, and not before or after, points to short-run financial conditions, rather than preferences or school readiness, that are critical constraints in this empirical setting.

To test the liquidity channel more directly, I first construct a cash-on-hand proxy: by residualizing parents' combined earnings on on household assets, each parent's years of education, age dummies, and district fixed effects. Because higher residual earnings signal extra liquid income net of long-run endowments, they index weaker short-term constraints. Indeed, Table 7 shows that a 10-percentage-point increase in mothers' relative potential earnings raises enrollment by 5.6 ppts in the top tercile of this liquidity measure, but by an insignificant 1.9 ppts in the bottom tercile (p=0.070 for equality). This pattern makes intuitive sense, as parental control matters most when at least some liquid funds exist to be reallocated, reinforcing the view that binding liquidity, not underlying preferences or ability, limits otherwise university-ready students.

These results echo findings from recent work on income timing and enrollment. For instance, Manoli and Turner (2018) show that increases in families' cash-on-hand through the Earned Income Tax Credit, received during the spring semester of students' senior year, significantly raise college attendance. Similarly, Lovenheim (2011) find that unexpected gains in housing wealth at college-going age increase the likelihood of enrollment, with effects concentrated among liquidity-constrained households. In both studies, the positive effects of household resources on enrollment are concentrated among low-resource families. My results offer a complementary perspective: liquidity need not come from external transfers but can also be reallocated from within the household if bargaining power shifts toward the parent more inclined to invest in education.

5 Conclusion

In this paper, I document evidence of the role of intra-household bargaining dynamics in determining children's higher education participation. Exploiting plausibly exogenous shifts in parents' relative labour-market opportunities in Indonesia, I find that stronger female outside options raise mothers' decision-making authority, especially over educational choices. When these shifts occur as children graduate from high school, university attendance rises for both sons and daughters, with the largest gains among households unlikely to face binding short-term financial constraints.

A key conceptual implication of these results is whether parental income and wealth translate into investments in children's higher education depends critically on the distribution of intra-household bargaining power. This highlights a more nuanced view of the roles of short-run budget constraints in shaping educational outcomes: relaxing the budget constraint can increase household educational investments in children insofar as resources are controlled by the more altruistic parent in the family. Hence, policies that narrow gender wage gaps can yield important benefits, including promoting upward mobility if not also economic development (Doepke and Tertilt 2019).

References

Acemoglu, D., and J.S. Pischke. 2001. "Changes in the Wage Structure, Family Income, and children's Education." *European Economic Review* 45:890–904.

Addoum, J.M. 2017. "Household Portfolio Choice and Retirement." *Review of Economics and Statistics* 99:870–883.

Aizer, A. 2010. "The Gender Wage Gap and Domestic Violence." *American Economic Review* 100:1847–59.

Alderman, H., P.A. Chiappori, L. Haddad, J. Hoddinott, and R. Kanbur. 1995. "Unitary Versus Collective Models of the Household: Is It Time to Shift the Burden of Proof?" *The World Bank Research Observer* 10:1–19.

Alesina, A., S. Hohmann, S. Michalopoulos, and E. Papaioannou. 2021. "Intergenerational mobility in Africa." *Econometrica* 89:1–35.

Anderson, S., and M. Eswaran. 2009. "What Determines Female Autonomy? Evidence from Bangladesh." *Journal of Development Economics* 90:179–191.

Atkin, D. 2016. "Endogenous Skill Acquisition and Export Manufacturing in Mexico." *American Economic Review* 106:2046–85.

Attanasio, O., T. Boneva, and C. Rauh. 2022. "Parental beliefs about returns to different types of investments in school children." *Journal of Human Resources* 57:1789–1825.

Attanasio, O., S. Cattan, and C. Meghir. 2022. "Early childhood development, human capital, and poverty." *Annual Review of Economics* 14:853–892.

Attanasio, O.P., and V. Lechene. 2014. "Efficient responses to targeted cash transfers." *Journal of political Economy* 122:178–222.

Autor, D., D. Dorn, and G. Hanson. 2019. "When work disappears: Manufacturing decline and the falling marriage market value of young men." *American Economic Review: Insights* 1:161–178.

Bastian, J., and K. Michelmore. 2018. "The Long-Term Impact of the Earned Income Tax Credit on Children's Education and Employment Outcomes." *Journal of Labor Economics* 36:1127–1163.

Belley, P., and L. Lochner. 2007. "The Changing Role of Family Income and Ability in Determining Educational Achievement." *Journal of Human Capital* 1:37–89.

Bergvall, S. 2024. "Women's economic empowerment and intimate partner violence." *Journal of Public Economics* 239:105211.

Bertrand, M., E. Kamenica, and J. Pan. 2015. "Gender identity and relative income within households." *The Quarterly Journal of Economics* 130:571–614.

Björklund, A., M. Lindahl, and E. Plug. 2006. "The Origins of Intergenerational Associations: Lessons from Swedish Adoption Data." *The Quarterly Journal of Economics* 121:999–1028.

Björklund, A., and K.G. Salvanes. 2011. "Education and family background: Mechanisms and policies." In *Handbook of the Economics of Education*. Elsevier, vol. 3, pp. 201–247.

Black, S.E., and P.J. Devereux. 2011. "Recent developments in intergenerational mobility." *Handbook of labor economics* 4:1487–1541.

Bleakley, H., and J. Ferrie. 2016. "Shocking Behavior: Random Wealth in Antebellum Georgia and Human Capital across Generations." *The Quarterly Journal of Economics* 131:1455–1495.

Borusyak, K., P. Hull, and X. Jaravel. 2022. "Quasi-experimental shift-share research designs." *The Review of economic studies* 89:181–213.

Bound, J., M.F. Lovenheim, and S. Turner. 2010. "Why Have Hollege Completion Rates Declined? An Analysis of Changing Student Preparation and Collegiate Resources." *American Economic Journal: Applied Economics* 2:129–57.

Bulman, G., R. Fairlie, S. Goodman, and A. Isen. 2021. "Parental Resources and College Attendance: Evidence from Lottery Wins." *American Economic Review* 111:1201–40.

Calvi, R. 2020. "Why are older women missing in India? The age profile of bargaining power and poverty." *Journal of Political Economy* 128:2453–2501.

Cameron, S.V., and C. Taber. 2004. "Estimation of Educational Borrowing Constraints Using Returns to Schooling." *Journal of Political Economy* 112:132–182.

Carneiro, P., and J.J. Heckman. 2002. "The Evidence on Credit Constraints in Post-Secondary Schooling." *The Economic Journal* 112:705–734.

Case, A., and C. Paxson. 2008. "Stature and status: Height, ability, and labor market outcomes." *Journal of political Economy* 116:499–532.

Coelli, M.B. 2011. "Parental Job Loss and the Education Enrollment of Youth." *Labour Economics* 18:25–35.

Dix-Carneiro, R., and B.K. Kovak. 2019. "Margins of labor market adjustment to trade." *Journal of International Economics* 117:125–142.

Dizon-Ross, R., and S. Jayachandran. 2023. "Detecting mother-father differences in spending on children: A new approach using willingness-to-pay elicitation." *American Economic Review: Insights* 5:445–459.

Doepke, M., and F. Kindermann. 2019. "Bargaining over babies: Theory, evidence, and policy implications." *American Economic Review* 109:3264–3306.

Doepke, M., and M. Tertilt. 2019. "Does female empowerment promote economic development?" *Journal of Economic Growth* 24:309–343.

Doss, C. 2013. "Intrahousehold bargaining and resource allocation in developing countries." *The World Bank Research Observer* 28:52–78.

Duflo, E. 2003. "Grandmothers and Granddaughters: Old-Age Pensions and Intrahousehold Allocation in South Africa." *The World Bank Economic Review* 17:1–25.

—. 2012. "Women empowerment and economic development." *Journal of Economic literature* 50:1051–1079.

Fernández, A., and F. Meza. 2015. "Informal employment and business cycles in emerging economies: The case of Mexico." *Review of Economic Dynamics* 18:381–405.

Goldsmith-Pinkham, P., I. Sorkin, and H. Swift. 2020. "Bartik instruments: What, when, why, and how." *American Economic Review* 110:2586–2624.

Heath, R., and A.M. Mobarak. 2015. "Manufacturing growth and the lives of Bangladeshi women." *Journal of development Economics* 115:1–15.

Kevane, M., and D.I. Levine. 2000. "The changing status of daughters in Indonesia.", pp. .

Liaqat, S., A. Donald, F. Jarvis, E. Perova, and H.C. Johnson. 2021. "Lost in Interpretation: Why Spouses Disagree on Who Makes Decisions." Policy Research Working Paper No. 9883, World Bank.

Light, A., and W. Strayer. 2000. "Determinants of College Completion: School Quality or Student Ability?" *Journal of Human Resources*, pp. 299–332.

Lise, J., and K. Yamada. 2019. "Household sharing and commitment: Evidence from panel data on individual expenditures and time use." *The Review of Economic Studies* 86:2184–2219.

Løken, K.V. 2010. "Family Income and Children's Education: Using the Norwegian Oil Boom as a Natural Experiment." *Labour Economics* 17:118–129.

Lovenheim, M.F. 2011. "The Effect of Liquid Housing Wealth on College Enrollment." *Journal of Labor Economics* 29:741–771.

Lundberg, S., and R.A. Pollak. 1993. "Separate Spheres Bargaining and the Marriage Market." *Journal of Political Economy* 101:988–1010.

Lundberg, S.J., R.A. Pollak, and T.J. Wales. 1997. "Do Husbands and Wives Pool Their Resources? Evidence from the United Kingdom Child Benefit." *Journal of Human Resources*, pp. 463–480.

Majlesi, K. 2016. "Labor Market Opportunities and Women's Decision Making Power within Households." *Journal of Development Economics* 119:34–47.

Manoli, D., and N. Turner. 2018. "Cash-On-Hand and College Enrollment: Evidence from Population Tax Data and the Earned Income Tax Credit." *American Economic Journal: Economic Policy* 10:242–71.

Manser, M., and M. Brown. 1980. "Marriage and Household Decision-Making: A Bargaining Analysis." *International Economic Review*, pp. 31–44.

Mazzocco, M. 2007. "Household Intertemporal Behaviour: A Collective Characterization and a Test of Commitment." *The Review of Economic Studies* 74:857–895.

McCaig, B., and N. Pavcnik. 2018. "Export markets and labor allocation in a low-income country." *American Economic Review* 108:1899–1941.

McElroy, M.B., and M.J. Horney. 1981. "Nash-Bargained Household Decisions: Toward a Generalization of the Theory of Demand." *International Economic Review*, pp. 333–349.

Newhouse, D., and K. Beegle. 2006. "The Effect of School Type on Academic Achievement Evidence from Indonesia." *Journal of Human Resources* 41:529–557.

Oreopoulos, P., and K.G. Salvanes. 2011. "Priceless: The Nonpecuniary Benefits of Schooling." *Journal of Economic Perspectives* 25(1):159–84.

Pollak, R.A. 2005. "Bargaining Power in Marriage: Earnings, Wage Rates and Household Production."

Qian, N. 2008. "Missing Women and the Price of Tea in China: The Effect of Sex-Specific earnings on Sex Imbalance." *The Quarterly Journal of Economics* 123:1251–1285.

Quisumbing, A.R., and J.A. Maluccio. 2003. "Resources at marriage and intrahousehold allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Africa." *Oxford Bulletin of Economics and Statistics* 65:283–327.

Rees, D.I., and H.N. Mocan. 1997. "Labor Market Conditions and the High School Dropout Rate: Evidence from New York State." *Economics of Education Review* 16:103–109.

Schaner, S. 2017. "The Cost of Convenience? Transaction Costs, Bargaining Power, and Savings Account Use in Kenya." *Journal of Human Resources* 52:919–945.

Shavit, Y., and H.P. Blossfeld. 1993. *Persistent Inequality: Changing Educational Attainment in Thirteen Countries*. Boulder, CO: Westview Press.

Shenhav, N. 2021. "Lowering standards to wed? Spouse quality, marriage, and labor market responses to the gender wage gap." *Review of Economics and Statistics* 103:265–279.

Thomas, D. 1990. "Intra-Household Resource Allocation: An Inferential Approach." *Journal of Human Resources*, pp. 635–664.

Wang, H., and Z. Cheng. 2021. "Mama loves you: The gender wage gap and expenditure on children's education in China." *Journal of Economic Behavior & Organization* 188:1015–1034.

Ward-Batts, J. 2008. "Out of the Wallet and Into The Purse Using Micro Data to Test Income Pooling." *Journal of Human Resources* 43:325–351.

Zhao, C., and X. Qu. 2024. "Place-Based Policies, Rural Employment, and Intra-Household Resources Allocation: Evidence from China's Economic Zones." *Journal of Development Economics* 167:103210.
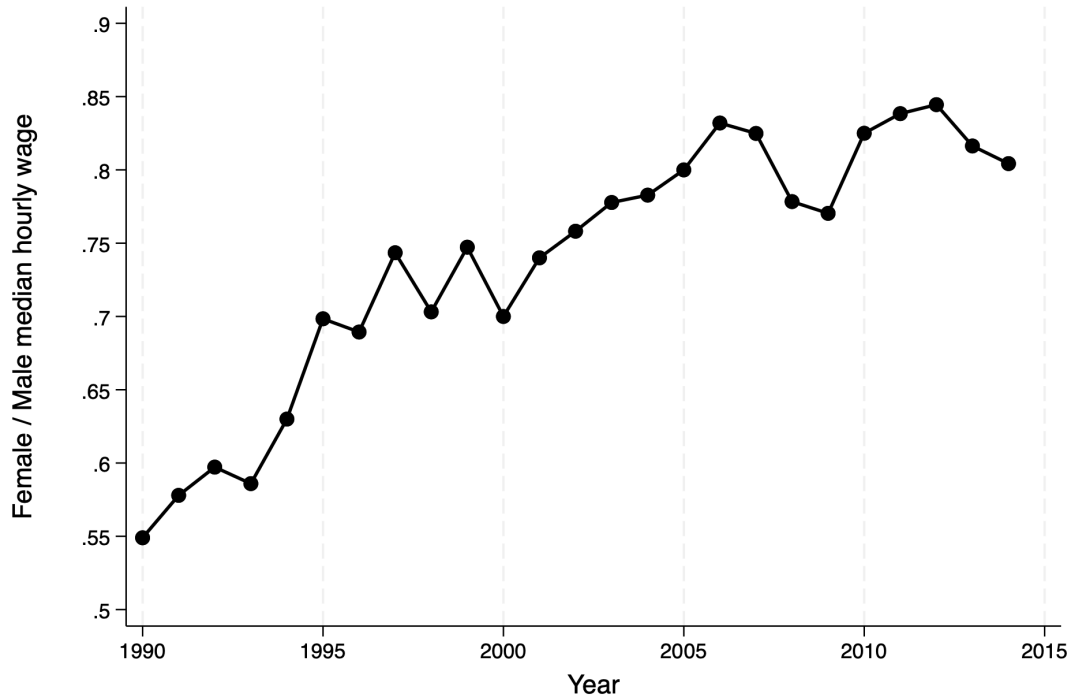
Figure 1—Gender Wage Gap in Indonesia, 1990-2014.

Notes—Author calculation based on 1990-2014 data from the Indonesian Labor Force Survey. Gender wage gap is calculated as the ratio of female-to-male median hourly. Sample is restricted to workers in the formal wage sector working at least 30 hours per week and between ages 15 and 55 in the survey year.

Figure 2—Trends in college completion by gender, 1990–2014.

Notes: Share of young adults (aged 22–30) reporting completion of a 4-year university degree, by gender. Author's calculations from the Indonesian Labor Force Survey.

Figure 3—Mothers' Relative Potential Earnings by Cohort.

<div align="center">Table 1. IV First Stage</div>

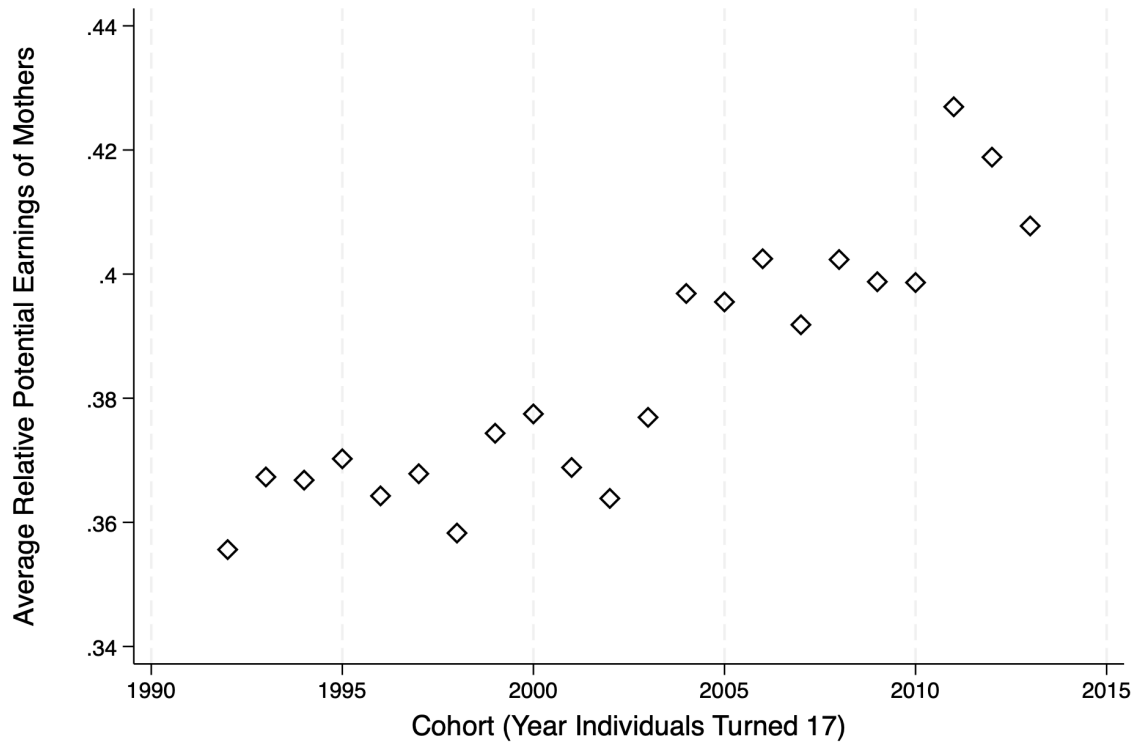|	Correlation with Potential Earnings		Testing Cross-Effects	
	Parents' Total Potential Earnings	Mother's Relative Potential Earnings ($\times 100$)	Father's Potential Earnings	Mother's Potential Earnings
Father's instrument	1.325***	-0.021***	1.406***	-0.081
	(0.150)	(0.002)	(0.112)	(0.068)
Mother's instrument	1.676***	0.038***	0.023	1.653***
	(0.268)	(0.005)	(0.076)	(0.224)
Observation	4,385	4,385	4,385	4,385

Notes—Each column reports results from a separate first-stage regression, with either parents' total potential earnings, father's potential earnings, mother's potential earnings, or mother's relative potential earnings (×100) as the dependent variable. All specifications control for each parent's years of education, age (measured when the individual was 17), as well as district and cohort fixed effects. Robust standard errors clustered at the district level are reported in parentheses.

Table 2—Relative Labor Market Opportunities and Decision-Making Authority Over Children's Education

	Wife Decides Children's Education (Wife's Self-Report)			Husband Decides Children's Education (Husband's Self-Report)		
	OLS	IV	IV	OLS	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Effect of 10ppt increase in wife's relative potential earnings	0.018***	0.047**		-0.002	-0.059***	
	(0.005)	(0.024)		(0.005)	(0.021)	
× Wife not working			0.045*			-0.052**
			(0.025)			(0.022)
× Wife working			0.048*			-0.068***
			(0.025)			(0.022)
Household FEs	Yes	Yes	Yes	Yes	Yes	Yes
District FEs	Yes	Yes	Yes	Yes	Yes	Yes
Survey year FEs	Yes	Yes	Yes	Yes	Yes	Yes
First-stage F-stat		151.0	75.0		131.2	65.6
Observation	15,243	15,243	15,243	13,962	13,962	13,962
Outcome mean	0.16	0.16	0.16	0.12	0.12	0.12

Notes—All specifications control for spouses' combined potential earnings (instrumented), each spouse's age (dummies) and years of education, wife's working status, log household income and assets, number of children. Standard errors clustered at the household level in parentheses. * significant at 0.1 level, ** significant at 0.05 level, *** significant at 0.01 level.

Table 3—Mother's Relative Potential Earnings and Children's University Enrollment

	University Enrollment		
	OLS	IV	IV
	(1)	(2)	(3)
Effect of a-10ppt increase in mother's pot. rel. earnings	0.013	0.042***	
	(0.009)	(0.016)	
× Female			0.044**
			(0.020)
× Male			0.041**
			(0.020)
Cohort FEs	Yes	Yes	Yes
District FEs	Yes	Yes	Yes
First-stage F-statistic		49.9	25.5
p-val (Male = Female)			0.88
Observation	4,385	4,385	4,385

Notes—Sample includes children aged 18–39 in IFLS-4 who have completed at least senior high school. All specifications control for sex, number of siblings, ethnicity, height, and the type of school attended at the primary, junior, and senior secondary levels; parents' age dummies and years of schooling; parents' combined actual earnings and potential earnings; household assets; and province-level labor market conditions at age 17, including the unemployment rate among 18–24-year-olds, the share of adults with a university degree, and the female labour force participation rate. Mother's relative potential earnings and parents' total potential earnings are instrumented in columns 2 and 3 using spouse-specific shift-share instruments. Robust standard errors clustered at the district level in parentheses. * significant at the 10% level, ** 5%, *** 1%.

Table 4—Balance Tests

Characteristics	Obs	IV estimates Coef.	IV estimates SE
Log parents' earnings	4,385	0.092	(0.126)
Log household assets	4,385	0.402	(0.244)
Male	4,385	0.018	(0.022)
Javanese	4,385	-0.010	(0.016)
Attended public, non-religious senior secondary school	4,385	-0.018	(0.027)
Height (cm)	4,385	0.111	(0.364)
Cognitive test scores (z-score)	3,464	-0.012	(0.031)

Notes—This table reports IV estimates obtained from regressing background characteristics on predicted mother's relative potential earnings. All specifications control for (predicted) parents' total potential earnings, father's and mother's age dummies and years of schooling, as well as district and cohort fixed effects. Robust standard errors clustered at the district level in parentheses.

Table 5—Effects of Mother's Relative Potential Earnings at Different Child Ages

Effect of a-10ppt increase in mother's pot. rel. earnings	University Enrollment	
	OLS	IV
	(1)	(2)
When child aged 15	-0.004	0.005
	(0.008)	(0.020)
When child aged 16	0.000	0.021
	(0.009)	(0.021)
When child aged 17	0.013	0.042***
	(0.009)	(0.016)
When child aged 18	-0.005	0.024
	(0.009)	(0.018)
When child aged 19	-0.011	0.003
	(0.009)	(0.016)
When child aged 20	-0.002	-0.004
	(0.009)	(0.020)

Notes—This table presents results from estimating equation 2, with parents' potential earnings measured at different child ages. Parents' characteristics are held constant at the child's age 17, while potential earnings are calculated using lagged and lead data from SAKERNAS for workers with comparable characteristics. A full set of covariates listed in table 3 is included. Robust standard errors clustered at the district level are shown in parentheses. *** significant at the 0.01 level.

Table 6—Heterogeneity by Mother's Working Status when Child Aged 17

	University Enrollment
Effect of a-10ppt increase in mother's pot. rel. earnings	
× Mother not working when child aged 17	0.034*
	(0.017)
× Mother working when child aged 17	0.049***
	(0.020)
Cohort FEs	Yes
District FEs	Yes
First-stage F-statistic	25.9
p-val (Mother not working = Mother working)	0.28
Observation	4,385

Notes—This table reports results obtained from an IV specification of equation 2, where both mother's relative potential earnings and parents' total potential earnings are instrumented using spouse-specific shift-share instruments. A full set of covariates listed in Table 3 and mother's working status when child aged 17 are included. Robust standard errors clustered at the district level in parentheses. * significant at 0.1 level, ** significant at 0.05 level, *** significant at 0.01 level.

Table 7—Heterogeneity by Household Resources

	University Enrollment
Effect of a-10ppt increase in mother's pot. rel. earnings	
✕ Residualized parents's earnings: Lowest tercile	0.019
	(0.021)
✕ Residualized parents's earnings: Middle tercile	0.046**
	(0.018)
✕ Residualized parents's earnings: Top tercile	0.056***
	(0.020)
Cohort FEs	Yes
District FEs	Yes
First-stage F-statistic	19.7
p-val (Lowest tercile = Top tercile)	0.070*
Observation	4,385

Notes—This table reports results obtained from an IV specification of equation 2, where both mother's potential relative earnings and parents' potential earnings are instrumented using spouse-specific shift-share instruments. Residualized parents' earnings are obtained from a regression of parents' earnings on a quadratic of household assets, each parent's years of schooling and age dummies, and district fixed effects. A full set of covariates listed in Table 3 and indicators for parents' earnings tercile are included. Robust standard errors clustered at the district level in parentheses. * significant at 0.1 level, ** significant at 0.05 level, *** significant at 0.01 level.

Appendix Table 1—Summary Statistics of the Main Sample

Variables	Obs	Mean	SD
Enrolled in a university (IFLS-4)	4,385	0.32	0.47
Age	4,385	27.7	5.97
Male	4,385	0.49	0.50
Height (cm)	4,385	159.5	8.5
Javanese	4,385	0.43	0.49
Sundanese	4,385	0.10	0.30
Attended public, non-religious senior secondary school	4,385	0.49	0.50
Attended public, religious senior secondary school	4,385	0.04	0.20
Attended private, non-religious senior secondary school	4,385	0.27	0.44
Number of siblings	4,385	2.4	1.5
Mother's potential relative earnings	4,385	0.39	0.13
Father's years of schooling	4,385	8.6	4.3
Mother's years of schooling	4,385	7.4	4.1
Father's age (when child aged 17)	4,385	45.9	4.5
Mother's age (when child aged 17)	4,385	41.6	4.6
Parents' monthly earnings during adolescence (million 2014 Rupiah)	4,385	2.63	3.58
Household assets during adolescence (million, 2014 Rupiah)	4,385	150.1	319.9

*Notes*—Sample includes children aged 18-39 in IFLS-4 who have at least graduated from high school.

Appendix Table 2—Rotemberg Weights

Industry	Rotemberg weight	
	Women's potential earnings	Men's potential earnings
Agriculture	0.631	0.220
Mining	0.000	0.441
Manufacturing	0.119	0.066
Utilities	0.000	0.000
Construction	0.000	0.047
Wholesale and Retail	0.000	0.031
Transportation, Storage, and Communication	0.000	0.031
Finance, Real Estate, and Insurance	0.000	0.000
Services	0.250	0.163

Notes—This table reports the Rotemberg weights, obtained using the method outlined in Goldsmith-Pinkham, Sorkin, and Smith (2020). These weights quantify the contribution of each industry to the identification of mothers' potential relative earnings through the constructed shift-share instruments.
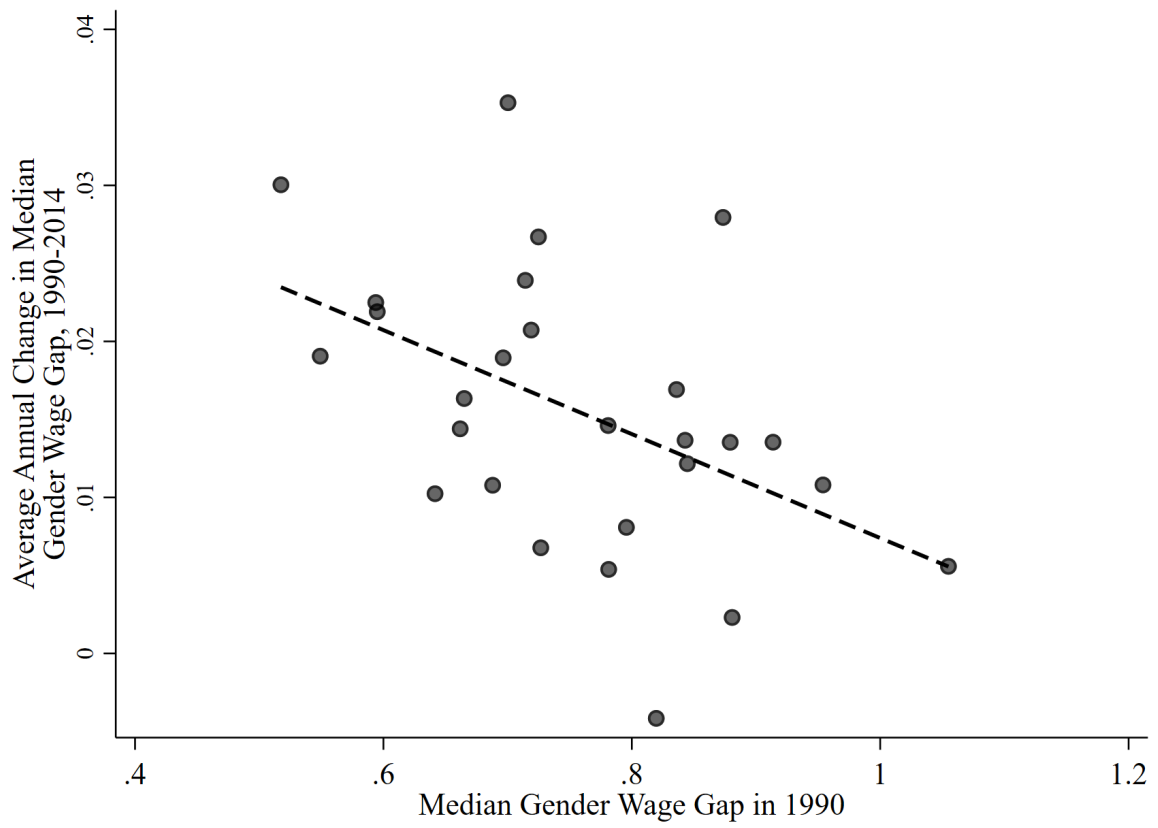
Appendix Figure 1—Correlation between Gender Wage Gap in 1990 and Average Annual
Change (1990-2014) by Province.
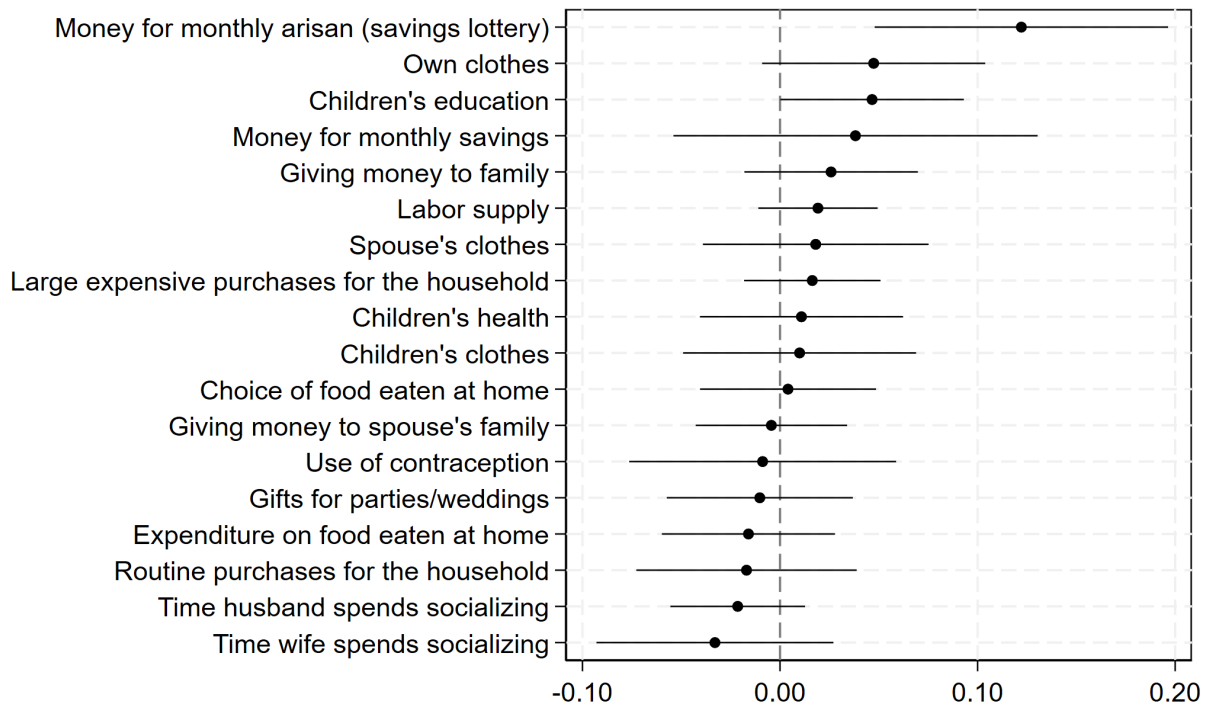
Appendix Figure 2—Effects of Wife's Relative Earnings on Decision-Making Authority
(Wife's Self-Report)

Notes—Each point represents the estimated effect of a 10 percentage point increase in wife's relative potential earnings on whether the wife is the sole decision-maker in a given household domain. Estimates are obtained from IV regressions controlling for spouses' combined potential earnings (instrumented), each spouse's age (dummies) and years of education, wife's working status, log household income and assets, number of children, and household, district, and survey year fixed effects. Vertical bars denote 95% confidence intervals. Standard errors are robust and clustered at the household level.
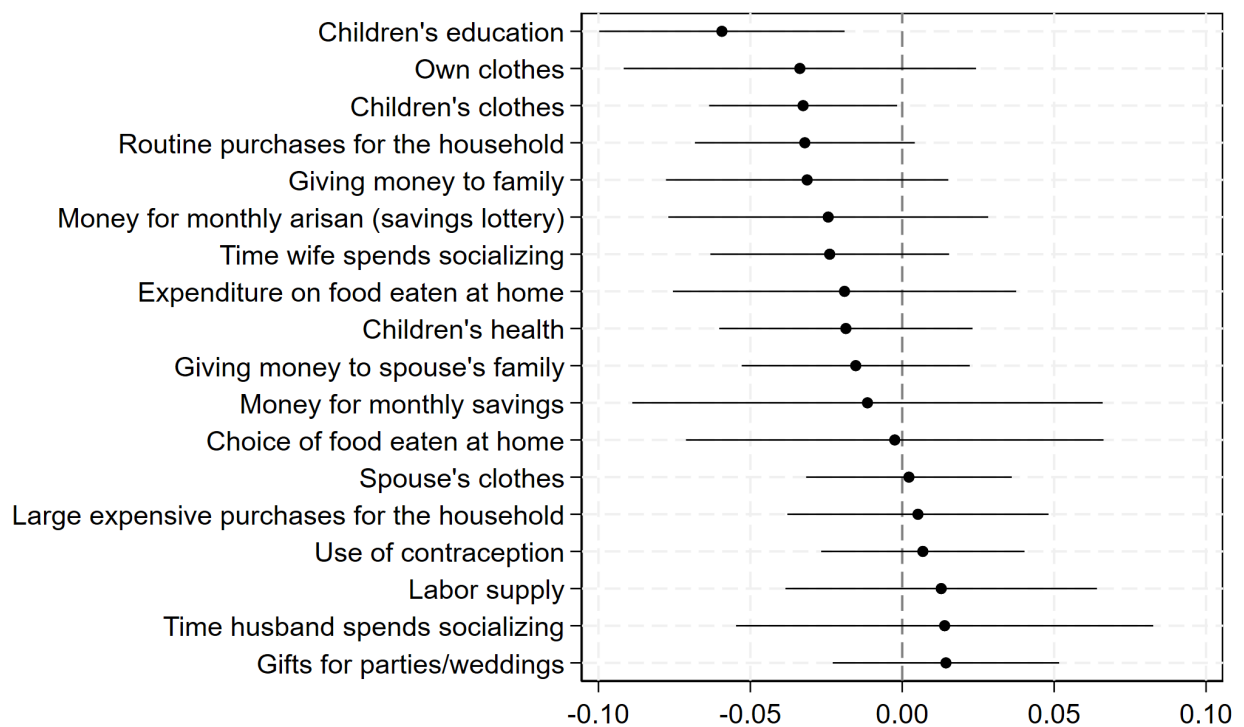
Appendix Figure 3—Effects of Wife's Relative Earnings on Decision-Making Authority
(Husband's Self-Report)

Notes—Each point represents the estimated effect of a 10 percentage point increase in wife's relative potential earnings on whether the husband is the sole decision-maker in a given household domain. Estimates are obtained from IV regressions controlling for spouses' combined potential earnings (instrumented), each spouse's age (dummies) and years of education, wife's working status, log household income and assets, number of children, and household, district, and survey year fixed effects. Vertical bars denote 95% confidence intervals. Standard errors are robust and clustered at the household level.

Appendix Table 3—Effects of Mother's Relative Potential Earnings at Different Child Ages

Effect of a-10ppt increase in mother's pot. rel. earnings	Completed Senior High School	
	OLS	IV
	(1)	(2)
When child aged 15	0.006	0.017
	(0.003)	(0.012)
When child aged 16	-0.002	0.004
	(0.004)	(0.009)
When child aged 17	0.002	0.007
	(0.004)	(0.009)
When child aged 18	-0.001	0.010
	(0.004)	(0.011)
When child aged 19	0.005	0.007
	(0.004)	(0.007)
When child aged 20	0.001	-0.001
	(0.005)	(0.008)

Notes—This table presents regression results from estimating equation 3, with parents' potential earnings measured at different child ages. Sample includes all individuals aged 18-39 in IFLS-4 who have at least attended senior secondary school. Parents' characteristics are held constant at the child's age 17, while potential earnings are calculated using lagged and lead data from SAKERNAS for workers with comparable characteristics. A full set of covariates listed in table 2 is included. Robust standard errors, clustered at the district level, are shown in parentheses. * significant at the 0.1 level, ** significant at the 0.05 level, *** significant at the 0.01 level.

Appendix Table 4—Robustness of Main Results to Alternative Specifications

	University Enrollment		
	OLS	IV	IV
	(1)	(2)	(3)

Panel A. Exclude Agriculture

Effect of a-10ppt increase in mother's pot. rel. earnings	0.011	0.039**	
	(0.008)	(0.015)	
⨯ Female			0.042**
			(0.019)
⨯ Male			0.035*
			(0.020)
First-stage F-statistic		33.8	16.9
Observation	4,268	4,268	4,268

Panel B. Exclude Mining

Effect of a-10ppt increase in mother's pot. rel. earnings	0.013	0.038**	
	(0.009)	(0.015)	
Male			0.041**
			(0.019)
Female			0.036*
			(0.020)
First-stage *F*-statistic		46.2	23.4
Observation	4,382	4,382	4,382

Notes—This table presents estimates obtained from repeating the analysis in Table 2 with the most influential sectors (reported in Appendix Table 2) excluded from the construction of mother's potential relative earnings and the shift-share instruments. * significant at 0.1 level, ** significant at 0.05 level, *** significant at 0.01 level.

Appendix Table 5—Heterogeneity by Mother's Education and Urban Residence

	University Enrollment
Panel A. By Mother's Education	
Effect of a-10ppt increase in mother's pot. rel. earnings	
× Mother's education: less than junior secondary	0.041**
	(0.017)
× Mother's education: junior secondary or higher	0.049*
	(0.027)
p-val (Mother with junior high = Mother did not complete primary)	0.730
First-stage F-statistic	48.2
Panel B. By Urban Residence	
Effect of a-10ppt increase in mother's pot. rel. earnings	
× Rural	0.031
	(0.023)
× Urban	0.042***
	(0.016)
p-val (Mother not working = Mother working)	0.28
First-stage F-statistic	60.9
Cohort FEs	Yes
District FEs	Yes
Observation	4,385

Notes—This table reports results from IV specifications of equation 2, where both mother's relative potential earnings and parents' total potential earnings are instrumented using spouse-specific shift-share instruments. A full set of covariates listed in Table 3 is included. Panel A additionally controls for an indicator for whether the mother completed primary school; Panel B includes an indicator for household urban residence. Robust standard errors clustered at the district level in parentheses. * significant at 0.1 level, ** significant at 0.05 level, *** significant at 0.01 level.