Is women's empowerment in agriculture associated with better nutrition and education outcomes for children? Evidence from Bangladesh

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Abstract

This paper examines the relationship between empowerment gaps between men and women in the same household and children's nutrition and education outcomes using nationally-representative data from the 2012 Bangladesh Integrated Household Survey (BIHS). We measure relative empowerment using direct measures of empowerment collected from men and women in the same households using the Women's Empowerment in Agriculture Index. Our findings suggest that empowerment gaps are only weakly linked to children's nutrition, although significant differences exist between boys and girls depending on the empowerment measures used. Younger girls (aged 6-10) and older boys and girls (aged 11-17) are more likely to receive more education when mothers are more educated. Overall, the household head's education is significantly associated with better nutrition and education outcomes for children, which may be reflecting a wealth effect.

Keywords: Women's empowerment; gender; nutrition; education; Bangladesh.

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1. Introduction

A growing body of literature documents a strong positive association between women's status and control over resources and improvements in children's outcomes, particularly nutrition and education (Quisumbing and Maluccio 2003; Bhagowalia et al. 2012; Allendorf 2007; Skoufias 2005; Ackerson and Subramanian 2008; Smith et al. 2003; Shroff et al. 2011; Quisumbing and Hallman 2003; van den Bold, Quisumbing, and Gillespie 2013; Cunningham et al. 2015). This suggests that closing gender gaps and empowering women is likely to contribute to the wellbeing of not only the women themselves but also their children. While a growing number of studies have gone beyond simple proxy measures of empowerment such as education and wealth, to more direct measures of empowerment, such as indicators related to decisionmaking power (Allendorf 2007; Shroff et al. 2011; Bhagowalia et al. 2012) and domestic violence (Ackerson and Subramanian 2008; Bhagowalia et al. 2012; Asling-Monemi et al. 2003; Asling-Monemi, Tabassum Naved, and Persson 2008), these studies typically focus on women's empowerment in the domestic sphere, whereas few have focused on the economic sphere, particularly in the agricultural sector where majority of poor people in developing countries make their living (Malapit and Quisumbing 2015; Malapit et al. 2015). In addition, many of these studies collect information from women only and cannot be used to measure gender empowerment gaps within the household. There is now considerable evidence demonstrating the importance of addressing intrahousehold gender inequalities to enable progress towards development objectives (Alderman et al. 1995; Haddad, Hoddinott, and Alderman 1997; Behrman 1997; Strauss, Mwabu, and Beegle 2000; Quisumbing 2003), but understanding intrahousehold gender gaps require similar – if not identical – indicators for both men and women in the same households. In households where both men and women make decisions on children's wellbeing, one would have

to control for both men's and women's empowerment. Otherwise, it is not always clear whether investments in children improve because women prefer to invest more in children and have greater bargaining power within the household, suggesting that relative empowerment matters, or whether women who have higher status also tend to have partners who value and contribute towards investments in children. Lastly, empowerment is a complex concept that spans many dimensions. For rural women especially, a comparison of empowerment measures across a range of domains within and beyond agriculture would help identify the key dimensions that facilitate investments in the next generation.

In this paper, we provide empirical evidence on the relationship between relative empowerment between men and women in the same household and children's nutrition and education outcomes in a household bargaining framework using nationally-representative data from the 2012 Bangladesh Integrated Household Survey (BIHS). Our primary goal is to understand whether and to what extent empowerment gaps between men and women within the household is associated with children's wellbeing, and whether these gender inequalities have differential effects on boys and girls. We measure empowerment in agriculture using a new direct, survey-based index called the Women's Empowerment in Agriculture Index (WEAI), which assesses women's empowerment in five domains in agriculture: decisionmaking over production, ownership and decisions over resources, control over use of income, leadership in the community, and time use. A useful feature of the WEAI is that the same information is collected for both the primary male and primary female decisionmakers in the household, which can be used to construct measures of intrahousehold disparities. More information on the piloting, methodology and construction of the WEAI is available in Alkire et al. (2013).

Our findings suggest that gender gaps in empowerment are only weakly linked to children's nutrition, although significant differences exist between boys and girls depending on the empowerment measures used. Younger girls ages 6-10 years old and older boys and girls ages 11-17 years old are more likely to receive more education when mothers are more educated. Overall, the household head's (father's) education is significantly associated with better nutrition and education outcomes for children. As our results on parental education suggest, fathers' empowerment may be reflecting a 'wealth' effect that is invested in children's nutrition and education when they are young, while mothers' empowerment becomes more important in keeping children in school.

2. Background

Women's status and investments in children's wellbeing

To be completed.

Measuring bargaining power using the WEAI

The WEAI is a program-level index based on the Alkire-Foster methodology for multidimensional indices (Alkire and Foster 2011b; Alkire and Foster 2011a). The WEAI collects individual-level data from primary male and primary female decisionmakers within the same households. It measures the extent of individuals' engagement in the agricultural sector in five domains: (1) decisions over agricultural production, (2) access to and decisionmaking power over productive resources, (3) control over use of income, (4) leadership in the community, and (5) time use. The five domains are weighted equally, and are measured by ten binary indicators, which are also weighted equally within each domain (Table 1). "Adequate achievement" for each indicator means that a person has surpassed a given threshold (0=inadequate, 1=adequate), and

the weighted sum of the ten indicators comprise a person's empowerment score. More information on the methodology, piloting, and validation of the WEAI is available at Alkire et al. (2013). In this paper, we use the individual-level empowerment scores and component indicators of primary male and primary female respondents to investigate the relationship between relative empowerment in agriculture and children's wellbeing.

3. Conceptual Framework

To understand whether and in what way women's empowerment in agriculture is relevant to investments in children's wellbeing outcomes in rural Bangladesh, we begin with a model of household decisionmaking in an agricultural household. We assume a collective agricultural household composed of a principal male and principal female decision maker who may have different endowments, constraints, and preferences. This is in line with the extensive empirical evidence rejecting the assumption of a unitary model of the household that assumes all household members have the same preferences and all household resources are pooled (see Alderman et al. 1995; Haddad, Hoddinott, and Alderman 1997; Behrman 1997; Strauss, Mwabu, and Beegle 2000; Quisumbing 2003 for reviews). Men and women may own or control different productive resources, have access to different types of technologies, or have skills in different types of production tasks or activities. They may also be bound by gender-based constraints that define the extent of their participation in agriculture and other livelihood activities, resulting in differences in the types of investments that men and women can make towards children's wellbeing outcomes. Gender norms may also result in different preferences between men and women on what types of food to consume and how to distribute food among household members, when and how to seek health care, and whether to send children to school and for how long. These gender-based differences imply that decisions on what and how to produce, as well

as decisions on the intrahousehold allocation of food, health, and other goods, are influenced by the relative bargaining power of men and women in the household.

The demand function for children's wellbeing can be derived from a collective agricultural household, similar to what is described above, augmented to include a production function for children's wellbeing and children's wellbeing in the utility function (Quisumbing and Maluccio 2003). The reduced form of the demand for children's wellbeing can then be expressed as some function of relative bargaining power as follows:

$$\mathbf{c}_i = f_i (\mu (a_m , a_f), \boldsymbol{I}, \boldsymbol{H}) \quad (1)$$

where $\mathbf{c}_i$ is a vector of children's wellbeing outcomes, including nutritional status and education, μ represents the relative bargaining strength of individuals, which is a function of proxy measures of male and female bargaining power (a_m and a_f, respectively); $\boldsymbol{I}$ is a vector of individual characteristics, such as sex, age, and age squared; and $\boldsymbol{H}$ is a vector of household characteristics, such as household size and composition, and other controls. The effects of individual bargaining power on children's outcomes are given by: $\partial \mathbf{c}_i / \partial a_j$, with $j = m, f$. This formulation also provides a straightforward test of the unitary model, which implies that the identity of the person in control over the resources is irrelevant, and $\partial \mathbf{c}_i / \partial a_j = 0$, with $j = m, f$ (Quisumbing and Maluccio 2003).

A variety of proxies for bargaining power have been used in the literature, including: (1) shares of income earned by women (Hoddinott and Haddad 1995); (2) unearned income (Thomas 1990; Schultz 1990); (3) current assets (Doss 1996); (4) inherited assets (Quisumbing 1994); (5) assets at marriage (Thomas, Contreras, and Frankenberg 1999); (6) the public provision of resources to specific household members (Lunderg, Pollak, and Wales 1997; Rubalcava and Thomas 2000), and more recently, interventions that provide transfers or increase

resources to women (see the extensive review in Yoong, Rabinovich, and Diepeveen 2012). Although the concept of empowerment is much broader than bargaining power, emphasizing the process of expanding agency and spanning multiple dimensions (Kabeer 1999; Malhotra and Schuler 2005; Ibrahim and Alkire 2007; Alkire et al. 2013; van den Bold, Quisumbing, and Gillespie 2013), many of the same indicators used to measure bargaining power, such as control over resources and say in household decisions, are also used to measure empowerment. For the purpose of this paper, which investigates household investments on children empirically, greater empowerment implies greater bargaining power, and vice versa.

Following Quisumbing and Maluccio (2003), we use human resources brought to the marriage including age and education to as measures of individual bargaining power. Individuals with greater human resources are more likely to command a larger share of household resources, and therefore, household decisions are more likely to reflect their personal preferences. Human capital is a useful indicator of bargaining power because it reflects the empowerment of individuals more broadly extending beyond the productive sphere. Although human capital may be endogenous to the result of marriage market selection or other unobservable characteristics, the timing of decisions is such that these are taken as given and therefore exogenous to decisions undertaken *within* the marriage (Quisumbing and Maluccio 2003). Another useful set of indicators of bargaining power include respondents' self-assessments as to their degree of influence in the community (9-point scale) and their overall life satisfaction (10-point scale). These subjective assessments reflect individuals' perceived empowerment in the community and their overall ability to make strategic life decisions. To capture empowerment in the productive sphere, we use both the overall empowerment scores and the underlying indicators of the WEAI. We are interested in whether gender empowerment gaps in agriculture exerts any additional

influence on children's wellbeing outcomes controlling for relative bargaining power as proxied by human resources brought to the marriage.

4. Empirical Specification

We estimate children's wellbeing outcomes as a function of child characteristics and relative bargaining power using equation (1) expressed as a linear function:

$$\begin{aligned} \boldsymbol{C_{ij}} = \beta_0 + \boldsymbol{\beta_1}(\boldsymbol{A}_{mj} - \boldsymbol{A}_{fj}) + \beta_2(E_{mj} - E_{fj}) + \beta_3 G_{ij} \\ + \boldsymbol{\beta_4}((\boldsymbol{A}_{mj} - \boldsymbol{A}_{fj}) \times G_{ij}) + \beta_5((E_{mj} - E_{fj}) \times G_{ij}) \\ + \boldsymbol{\beta_6}\boldsymbol{I}_{ij} + \boldsymbol{\beta_7}\boldsymbol{H}j + \varepsilon_{ij} \end{aligned} \quad (2)$$

where $\boldsymbol{C}_{ij}$ is a vector of wellbeing outcomes for child i in household j, including height-for-age (HAZ), weight-for-height (WHZ), and weight-for-age (WAZ) z-scores, and education measured as deviations from cohort means; $(\boldsymbol{A}_m - \boldsymbol{A}_f)$ represent the difference in the husband's and wife's human capital; $(E_{mj} - E_{fj})$ represents the difference in husband's and wife's empowerment measure; G_{ij} is an indicator variable equal to one if the child is a girl; $\boldsymbol{I}_{ij}$ is a vector of child characteristics; $\boldsymbol{H}_j$ is a vector of household characteristics and other controls; β_k are parameters to be estimated; and ε_{ij} is an error term. Our key coefficients of interest are β_2 for boys, and $(\beta_2 + \beta_5)$ for girls, which reflects the relationship between the outcome variable and relative empowerment, controlling for other proxy measures of relative bargaining power and relevant individual and household characteristics.

As in any analysis that investigates empowerment as an independent variable, one possible source of bias in estimating equation (2) is the potential endogeneity of empowerment. That is, empowerment is likely to be affected by the very same factors that influence children's nutrition and education. As in our earlier work using the BIHS (Sraboni et al. 2014), we estimate equation (2) using OLS as well as standard instrumental variables (IV) techniques to correct for

potential endogeneity bias, using the ivreg2 procedure in Stata 13 (Baum, Schaffer, and Stillman 2007; StataCorp 2013).

5. Data

We use data from the Bangladesh Integrated Household Survey (BIHS) (Ahmed 2013)[1], which is nationally-representative of rural areas in the seven administrative divisions of the country. The survey was conducted from December 2011 to March 2012, a busy agricultural season for men but not women, who are mainly involved in post-harvest activities. The BIHS consists of 1,608 nonfarm and 3,895 farm households, and collect a wide range of information on household demographics, education, employment, food and nonfood consumption and expenditures, agricultural production and livestock holding, individual anthropometric measurements, as well as separate WEAI modules for self-identified primary male and female decisionmakers collected separately and in private.

Because the WEAI measures empowerment in the agricultural sector, we restrict our analysis to the 3,895 farm households, including households relying on agricultural wage labor. This prevents the potential misclassification of individuals as disempowered when they do not participate in agricultural activities. In line with our conceptual framework where household decisionmakers negotiate with each other on how to allocate household resources, we need a measure for the relative strengths of individual bargaining power for men and women within the same household. Thus, we restrict our estimation samples to 3,213 households with valid WEAI responses from *both* the primary male and female decisionmakers. Of these households, our final

[1] See Sraboni, Quisumbing, and Ahmed (2013) for more information on survey design and implementation. The BIHS data is publicly available at hdl:1902.1/21266.

estimation samples include 1,930 co-resident children under five, 2,308 co-resident children aged 6-10 years old, and 1,911 co-resident children aged 11-17 years old.

Dependent variables

The available measures of children's wellbeing differ across age groups. We focus on nutritional status for younger children and education for older children.

Nutrition. For children under five years old, we use anthropometric height and weight information used to construct height-for-age (HAZ), weight-for-height (WHZ), and weight-for-age (WAZ) z-scores. Low HAZ is an indication of chronic malnutrition (shortness), low WHZ is an indication of acute malnutrition (thinness), and low WAZ indicates a combination of both chronic and acute malnutrition.

Education. Following Quisumbing and Maluccio (2003), we measure education as the deviation of each child's completed years of schooling from the average completed years of schooling of other children of the same age (by year). Unlike years of schooling, this measure prevents censoring at zero, and shows how well each child is doing relative to other children of the same age.[2] We analyze education outcomes for two groups of co-resident children: primary school-age children, ages 6-10 years old, and secondary school-age children, ages 11-17 years old.

Key independent variables

We measure relative bargaining power in two ways, one using empowerment measures collected as part of the WEAI and the other using human resources brought to marriage.

Empowerment measures. The WEAI measures empowerment in agriculture across five domains and ten indicators, all weighted equally within each domain (Table 1). In line with other

[2] Regressions using completed years of schooling as the dependent variable produced similar results and are not reported here.

studies that have analyzed the WEAI (Sraboni, Quisumbing, and Ahmed 2013; Malapit and Quisumbing 2015; Malapit et al. 2015), we use the overall pattern of women's disempowerment to guide our choice of empowerment indicators. First, we identify the key domains that contribute the most to disempowerment, and then within each key domain, identify the indicators that contribute the most to disempowerment. These are likely to be the areas that policymakers will target to improve women's empowerment. Next, we construct a continuous measure of empowerment that draws on the underlying individual-level data for the identified indicators. Lastly, we construct a relative empowerment measure for each household by taking the difference between the male and female variables.

The technical report on the BIHS (Sraboni, Quisumbing, and Ahmed 2013) shows that the *leadership* and *resources* domains contribute the most to women's disempowerment in rural Bangladesh (Figure 1). In addition, g*roup membership* contributes most to disempowerment in the leadership domain and *access to and decisions on credit* is the most critical indicator for the resources domain (Figure 2) (Sraboni, Quisumbing, and Ahmed 2013). However, the credit indicator may be problematic because the survey questions do not distinguish between non-borrowers who are truly credit constrained from those who have sufficient liquidity and therefore choose not to borrow (Sraboni et al. 2014). Following Sraboni et al. (2014), we also analyze the two other indicators for the resources domain, namely, *asset ownership* and *rights over assets*. Using this information, we use the following alternative measures of relative empowerment:

Model 1: Empowerment score. The difference between the individual-level empowerment scores of the primary male respondent and the primary female respondent in the household. Higher numbers indicate a larger gap between male and female empowerment favoring males, and zero indicates perfect equality. The individual-level empowerment score is

the weighted average of his or her achievements in the ten indicators that comprise the five domains of empowerment in agriculture, ranging from zero to one and is increasing in empowerment. The empowerment score reflects overall empowerment in agricultural production.

Model 2: (Leadership domain) Group membership. The male-female difference in the number of groups in which the respondents report being an active member of. Active membership in more groups imply wider social networks and therefore higher empowerment.

Model 3: (Resources domain) Credit decisions. The male-female difference in the number of credit decisions made solely or jointly by the respondents, averaged over the lending sources used. For every lending source, the respondent is asked who made the decision to borrow and who made the decision on how to use the money/item borrowed. In the absence of information on the size of the loans, we take the average number of decisions made across the five possible lending sources (NGO, informal, formal, friends/family, and ROSCAs) so as not to assign greater empowerment to those who approach multiple types of lenders.

Model 4: (Resources domain) Asset ownership. The male-female difference in the total number of asset types for which the respondent reports sole or joint ownership. Greater asset ownership implies greater access to resources and therefore higher empowerment.

Model 5: (Resources domain) Rights over assets. The male-female difference in the number of sole or joint decisions concerning purchase/sale/transfer of assets taken respondents, summed over all asset types. In the survey, the respondent is asked who can decide whether to sell, give away, mortgage/rent, and purchase each type of asset. More decisions over more asset types implies greater rights over assets and therefore higher empowerment.

Model 6: Ladder score. The male-female difference in the respondents' self-assessments regarding their degree of influence in the community (9-point scale). Higher scores indicate greater perceived influence. These subjective assessments reflect individuals' perceived empowerment in the community, and indicates empowerment beyond the productive sphere.

Model 7: Satisfaction score. The male-female difference in the respondents' self-assessments regarding their overall life satisfaction (10-point scale). Higher scores indicate greater life satisfaction. These subjective assessments reflect individuals' perceived ability to determine the course of their life, and indicates empowerment beyond the productive sphere.

Human resources brought to marriage. Following Quisumbing and Maluccio (2003), we interpret the husband and wife's age and education as human capital brought to the marriage. We construct these as male-female differences in age and years of schooling, to facilitate comparisons with our relative empowerment measures. In general, human capital reflects an individual's outside options, the resources that he or she can command outside the marriage. Individuals with greater human resources are more likely to control a larger share of household resources, and therefore, household decisions are more likely to reflect their personal preferences. Human capital also indicates the empowerment of individuals more broadly, extending beyond the productive sphere. Although human capital may be endogenous to the result of marriage market selection or other unobservable characteristics, the timing of decisions is such that these are taken as given and therefore exogenous to decisions undertaken *within* the marriage (Quisumbing and Maluccio 2003).

Instrumental variables

Appropriate instruments must be highly correlated with the relative empowerment of the husband and wife, but is exogenous to the outcomes of interest, in this case, children's nutritional

status and education. We use the same set of instruments for all the relative empowerment measures in our analysis. This include: (i) the number of types of informal credit sources in the village, (ii) the number of community activities the woman participated in during the previous year, (iii) the years of operation of the oldest NGO in the community, (iv) whether the wife's mother-in-law is present, and (v) whether the homestead land has been inherited by the woman. These instruments are likely to be correlated with women's ability to exercise agency and negotiate with their husbands, and are exogenous to current period decisions regarding children's wellbeing.[3]

Other independent variables

Our analysis also controls for child characteristics, household characteristics, and community characteristics. Child characteristics include: whether the child is under two years old, age in months and its square, whether the child belongs to the WEAI respondents, and whether is female. Household characteristics include: age, age-squared and years of schooling of the household head (typically the self-identified primary male respondent), whether the primary occupation of the household head is farmer or trader, household size, the age-sex composition of the household (with males aged 60 and above as the excluded category), the natural log of the amount of cultivable land owned by the household, the number of dairy cows owned by the household, whether the household has access to electricity. Community characteristics include: the price of rice and division dummies to control for location-specific effects. Summary statistics of all the variables used are presented in Table 2 (TBC).

6. Results

[3] One of the reasons we use relative empowerment rather than including male and female empowerment separately as independent variables is that it is very difficult to find valid instruments for male empowerment.

We present key results for our OLS and IV estimates for children under five's HAZ, WHZ, and WAZ, education deviations for children 6-10, and education deviations for children 11-17 in Tables 3-7, respectively. The IV diagnostics are reported at the end of each table. Our discussion will focus on our preferred OLS specification, unless the endogeneity test is rejected at the 10 percent level. The endogeneity test tests the null hypothesis that the empowerment measure is exogenous, given the set of instruments used. In the models where the endogeneity test is rejected, we focus our attention to the IV estimates instead. Note that we cannot reject the null hypothesis that empowerment is exogenous, except in the following specifications: model 5 (asset decisions) in the WHZ regression (Table 4), models 4 and 7 (asset ownership and satisfaction score) in the 6-10 education regression (Table 6), and model 2 (group membership) in the 11-17 education regression (Table 7).

Children's nutritional status

Children's HAZ, WHZ and WAZ appear to be only weakly correlated with relative bargaining power in the household (Tables 3-5). In the HAZ regressions (Table 3), none of the empowerment coefficients across the seven models are significant, except in the credit decisions specification (OLS model 3), where the relative empowerment coefficient for boys is insignificant, whereas the coefficient for girls is significant and negative. This implies that when credit decisionmaking favors the primary female respondent (smaller gender gap), girls are more likely to be taller than their reference age group.

In the WHZ regressions (Table 4), the strongest results are in the satisfaction score specification (OLS model 7), where a larger gender gap in the satisfaction score is negatively correlated with children's weight-for-height, particularly for boys. The results also suggest that the effect is smaller and less negative for girls. This implies that an increase in women's life

satisfaction improves boys' weight-for-height, but less so for girls. In the group membership specification (OLS model 2), the gender gap in group membership is insignificant for boys, but there is a weakly significant positive effect for girls. In the asset decisions specification (IV model 5), the gender gap in asset decisionmaking is positive and weakly significant for boys' weight-for-height, and negative and significant for girls. This suggests that more asset decisions taken on by women, narrowing the male-female gap in asset decisionmaking, is likely to favor girls' nutritional status in the short run.

In the WAZ regressions (Table 5), the gender gap in group membership (OLS model 2) and satisfaction score (OLS model 7) are negative and significantly correlated with children's weight-for-age. This implies that an increase in women's participation in groups and life satisfaction relative to their husbands, is likely to improve children's nutritional status. In the case of group membership, specifically, the results suggest that the effect is likely to favor boys rather than girls, perhaps reflecting the desire of mothers to invest in boys' health.

While gender gaps in human resources brought to marriage were insignificant in all the regressions, the education of the (male) household head is positive and highly significant in the HAZ and WAZ regressions (Tables 3 and 5). This may be reflecting a 'wealth' effect, where households led by a well-educated head are also more likely to have sufficient resources to invest in children's wellbeing.

Children's education

For younger children aged 6-10 years old (Table 6), the most notable results are in the asset ownership (IV model 4) and asset decisions (OLS model 5) specifications. We find that an increase in men's asset ownership (a higher gender gap) is correlated with more education for both boys and girls, whereas an increase in women's asset decisionmaking (smaller gender gap)

is weakly correlated with an increase in education favoring boys. Relative bargaining power measured as male-female gaps in age and education are insignificant for boys' education. However, across all the specifications, we find a highly significant and positive effect of the women's education and education among young girls.

For older children aged 11-17 years old (Table 7), we find that women's overall empowerment score and participation in groups (smaller gender gaps) are more likely to increase education for both boys and girls. Across all specifications, we also find that households where the primary female is more educated are also more likely to have more educated boys and girls, with much larger magnitudes for older children compared with younger children. This might suggest that more educated women are able to negotiate for keeping children in school for longer.

For both age groups, the education of the household head is highly significant in predicting children's education outcomes, although the magnitudes are much higher for older children. Consistent with our findings on nutritional status, this could be reflecting a 'wealth' effect, where households with better-educated heads can afford to invest in children's health and education.

7. Conclusions

Using a household bargaining framework, our analysis provides empirical evidence on the relationship between relative empowerment between men and women in the same household and children's nutrition and education outcomes in rural Bangladesh. Our primary goal is to understand whether and to what extent empowerment gaps between men and women within the household is associated with children's wellbeing, and whether these gender inequalities have differential effects on boys and girls. In addition to human resources brought to marriage as

proxy measures of relative bargaining power, we use a new direct, survey-based index called the Women's Empowerment in Agriculture Index (WEAI), which assesses women's empowerment in five domains in agriculture. These domains include: decisionmaking over production, ownership and decisions over resources, control over use of income, leadership in the community, and time use. A useful feature of the WEAI is that the same information is collected for both the primary male and primary female decisionmakers in the household, which we use to construct measures of intrahousehold disparities.

Our findings suggest that empowerment gaps are only weakly linked to children's nutrition, although significant differences exist between boys and girls depending on the empowerment measures used. Increasing women's decisionmaking over credit and assets are associated with improvements in girls' nutritional status (HAZ, WHZ), while increasing women's life satisfaction and participation in groups are associated with improvements in boys' nutritional status (WHZ, WAZ). Increasing men's asset ownership, women's participation in groups, and women's overall empowerment appear to increase schooling for primary school-age boys and girls, although increasing women's asset decisions appear to favor boys. Younger girls aged 6-10 and older boys and girls aged 11-17 are also more likely to receive more education when women are more educated. Overall, the (male) household head's education is significantly associated with better nutrition and education outcomes for children. As our results on parental education suggest, men's empowerment may be reflecting a 'wealth' effect that is invested in children's nutrition and education when they are young, while mothers' empowerment becomes more important in keeping children in school.

If households in rural Bangladesh act as one, following the unitary model, then all the measures of relative bargaining power should be insignificant. In general, our findings are

mixed. Our results do suggest however, that there is more consensus over investments in children's nutrition, especially for boys, perhaps reflecting common preferences between husband and wife on how sons should be raised. There appears to be less consensus over investments in girls' schooling, where women's own education exerts a significant influence. Women's overall empowerment, group membership, and own education are especially significant in increasing schooling for secondary school-age children, which suggests that both girls and boys are kept in school, and out of the labor force or marriage market, for longer. This is consistent with the literature documenting a strong positive association between women's status improvements in children's wellbeing (Quisumbing and Maluccio 2003; Bhagowalia et al. 2012; Allendorf 2007; Skoufias 2005; Ackerson and Subramanian 2008; Smith et al. 2003; Shroff et al. 2011; Quisumbing and Hallman 2003; van den Bold, Quisumbing, and Gillespie 2013; Cunningham et al. 2015), and justifies targeting programs towards improving women's bargaining position in the household.

8. References

Ackerson, Leland K, and S V Subramanian. 2008. "Domestic Violence and Chronic Malnutrition among Women and Children in India." *American Journal of Epidemiology* 167 (10): 1188–96. doi:10.1093/aje/kwn049.

Ahmed, Akhter. 2013. *Bangladesh Integrated Household Survey (BIHS) 2011-2012*. UNF:5:p7oXR2unpeVoD/8a48PcVA== International Food Policy Research Institute [Distributor] V4 [Version]. http://hdl.handle.net/1902.1/21266.

Alderman, Harold, Pierre-André Chiappori, Lawrence Haddad, John Hoddinott, and Ravi 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): 1–19. doi:10.1093/wbro/10.1.1.

Alkire, Sabina, and James Foster. 2011a. "Understandings and Misunderstandings of Multidimensional Poverty Measurement." *The Journal of Economic Inequality* 9 (2): 289–314. doi:10.1007/s10888-011-9181-4.

———. 2011b. “Counting and Multidimensional Poverty Measurement.” *Journal of Public Economics* 95 (7-8): 476–87. doi:10.1016/j.jpubeco.2010.11.006.

Alkire, Sabina, Ruth Meinzen-dick, Amber Peterman, Agnes Quisumbing, Greg Seymour, and Ana Vaz. 2013. “The Women’s Empowerment in Agriculture Index.” *World Development* 52: 71–91.

Allendorf, Keera. 2007. “Do Women’s Land Rights Promote Empowerment and Child Health in Nepal?” *World Development* 35 (11): 1975–88. doi:10.1016/j.worlddev.2006.12.005.

Asling-Monemi, Kajsa, Rodolfo Peña, Mary Carroll Ellsberg, and Lars Ake Persson. 2003. “Violence against Women Increases the Risk of Infant and Child Mortality: A Case-Referent Study in Nicaragua.” *Bulletin of the World Health Organization* 81 (1): 10–16. http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2572309&tool=pmcentrez&rendertype=abstract.

Asling-Monemi, Kajsa, Ruchira Tabassum Naved, and Lars Ake Persson. 2008. “Violence against Women and the Risk of under-Five Mortality: Analysis of Community-Based Data from Rural Bangladesh.” *Acta Paediatrica (Oslo, Norway : 1992)* 97 (2): 226–32. doi:10.1111/j.1651-2227.2007.00597.x.

Baum, Christopher F., Mark E. Schaffer, and Steven Stillman. 2007. “Enhanced Routines for Instrumental Variables/generalized Method of Moments Estimation and Testing.” *The Stata Journal* 7 (4): 465–506. http://www.stata-journal.com/article.html?article=st0030_3.

Behrman, Jere R. 1997. *Handbook of Population and Family Economics Volume 1. Handbook of Population and Family Economics*. Vol. 1. Handbook of Population and Family Economics. Elsevier. doi:10.1016/S1574-003X(97)80021-9.

Bhagowalia, Priya, Purnima Menon, Agnes R. Quisumbing, and Vidhya Soundararajan. 2012. *What Dimensions of Women’s Empowerment Matter Most for Child Nutrition: Evidence Using Nationally Representative Data from Bangladesh*. 1192. IFPRI Discussion Paper. Washington, DC: International Food Policy Research Institute (IFPRI). http://www.ifpri.org/publication/what-dimensions-women-s-empowerment-matter-most-child-nutrition?print.

Cunningham, Kenda, Marie Ruel, Elaine Ferguson, and Ricardo Uauy. 2015. “Women’s Empowerment and Child Nutritional Status in South Asia: A Synthesis of the Literature.” *Maternal & Child Nutrition* 11 (1): 1–19. doi:10.1111/mcn.12125.

Doss, Cheryl Renee. 1996. “Intrahousehold Resource Allocation in an Uncertain Environment.” *American Journal of Agricultural Economics* 78 (5). Agricultural and Applied Economics Association: 1335–39. http://econpapers.repec.org/RePEc:oup:ajagec:v:78:y:1996:i:5:p:1335-1339.

Haddad, L., J. Hoddinott, and H. Alderman, eds. 1997. *Intrahousehold Resource Allocation in Developing Countries: Models, Methods, and Policy.* Johns Hopkins University Press. http://www.cabdirect.org/abstracts/19971811206.html;jsessionid=6B9BA0D7A00371067C931DE5F6167CA6.

Hoddinott, John, and Lawrence Haddad. 1995. "Does Female Income Share Influence Household Expenditures? Evidence from Côte d'Ivoire." *Oxford Bulletin of Economics and Statistics* 57 (1): 77–96. doi:10.1111/j.1468-0084.1995.tb00028.x.

Ibrahim, Solava, and Sabina Alkire. 2007. "Agency and Empowerment: A Proposal for Internationally Comparable IndicatorsSolava Ibrahim, University of Cambridge, Cambridge, UK. Sabina Alkire, University of Oxford, Oxford, UK. We Are Grateful for the Comments of Valery Chirkov, Ed Deci, Mridul Eapen,." *Oxford Development Studies* 35 (4): 379–403. doi:10.1080/13600810701701897.

Kabeer, Naila. 1999. "Resources , Agency , Achievements : Re ¯ Ections on the Measurement of Women ' S Empowerment" 30 (May): 435–64.

Lunderg, Shelly J., Robert A. Pollak, and Terence J. Wales. 1997. "Do Husbands and Wives Pool Their Resources? Evidence from the United Kingdom Child Benefit on JSTOR." *The Journal of Human Resources* 32 (3): 463–80. http://www.jstor.org/stable/146179?origin=crossref&seq=1#page_scan_tab_contents.

Malapit, Hazel Jean L., Suneetha Kadiyala, Agnes R. Quisumbing, Kenda Cunningham, and Parul Tyagi. 2015. "Women's Empowerment Mitigates the Negative Effects of Low Production Diversity on Maternal and Child Nutrition in Nepal." *Journal of Development Studies*.

Malapit, Hazel Jean L., and Agnes R. Quisumbing. 2015. "What Dimensions of Women's Empowerment in Agriculture Matter for Nutrition in Ghana?" *Food Policy* 52C: 54–63. doi:10.1016/j.foodpol.2015.02.003.

Malhotra, Anju, and Sidney Ruth Schuler. 2005. "Women's Empowerment as a Variable in International Development." In *Measuring Empowerment: Cross-Disciplinary Perspectives*, edited by Deepa Narayan, 71–88. Washington, DC: The World Bank.

Quisumbing, Agnes R. 1994. "Intergenerational Transfers in Philippine Rice Villages." *Journal of Development Economics* 43 (2): 167–95. doi:10.1016/0304-3878(94)90003-5.

———. , ed. 2003. *Household Decisions, Gender, and Development: A Synthesis of Recent Research*. *Household Decisions, Gender, and Development: A Synthesis of Recent Research*. Washington, DC: International Food Policy Research Institute (IFPRI).

Quisumbing, Agnes R., and Kelly Hallman. 2003. *Marriage in Transition: Evidence on Age Education and Assets from Six Developing Countries.* 183. Policy Research Division Working Paper. New York. http://www.popcouncil.org/pdfs/wp/183.pdf.

Quisumbing, Agnes R., and John A. Maluccio. 2003. "Resources at Marriage and Intrahousehold Allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Africa*." *Oxford Bulletin of Economics and Statistics* 65 (3): 283–327. doi:10.1111/1468-0084.t01-1-00052.

Rubalcava, Luis, and Duncan Thomas. 2000. *Family Bargaining and Welfare*. 00-10. *Working Papers*. Labor and Population Program Working Paper. Santa Monica, CA: RAND. http://ideas.repec.org/p/ran/wpaper/00-10.html.

Schultz, T. Paul. 1990. "Testing the Neoclassical Model of Family Labor Supply and Fertility." *The Journal of Human Resources* 25 (4): 599–634. http://www.jstor.org/stable/145669.

Shroff, Monal R, Paula L Griffiths, Chirayath Suchindran, Balakrishna Nagalla, Shahnaz Vazir, and Margaret E Bentley. 2011. "Does Maternal Autonomy Influence Feeding Practices and Infant Growth in Rural India?" *Social Science & Medicine (1982)* 73 (3): 447–55. doi:10.1016/j.socscimed.2011.05.040.

Skoufias, Emmanuel. 2005. *PROGRESA and Its Impacts on the Welfare of Rural Households in Mexico*. Intl Food Policy Res Inst. http://books.google.com/books?hl=en&lr=&id=PHfZ8rmuUSkC&pgis=1.

Smith, Lisa C., Usha Ramakrishnan, Aida Ndiaye, Lawrence Haddad, and Reynaldo Martorell. 2003. *The Importance of Women's Status for Child Nutrition in Developing Countries*. *International Food Policy Research Institute Research Report 131*. Washington, DC. http://www.ifpri.org/publication/importance-womens-status-child-nutrition-developing-countries.

Sraboni, Esha, Hazel J. Malapit, Agnes R. Quisumbing, and Akhter U. Ahmed. 2014. "Women's Empowerment in Agriculture: What Role for Food Security in Bangladesh?" *World Development* 61 (September): 11–52. doi:10.1016/j.worlddev.2014.03.025.

Sraboni, Esha, Agnes R Quisumbing, and Akhter U Ahmed. 2013. *The Women ' S Empowerment in Agriculture Index : Results from the 2011-2012 Bangladesh Integrated Household Survey*. Dhaka, Bangladesh. http://ebrary.ifpri.org/cdm/singleitem/collection/p15738coll2/id/127504/rec/1.

StataCorp. 2013. "Stata Statistical Software: Release 13." College Station, TX: StataCorp LP.

Strauss, J., G. Mwabu, and K. Beegle. 2000. "Intrahousehold Allocations: A Review of Theories and Empirical Evidence." *Journal of African Economies* 9 (Supplement 1): 83–143. doi:10.1093/jafeco/9.Supplement_1.83.

Thomas, Duncan. 1990. "Intra-Household Resource Allocation: An Inferential Approach." *Journal of Human Resources* 25 (4). University of Wisconsin Press: 635–64. http://ideas.repec.org/a/uwp/jhriss/v25y1990i4p635-664.html.

Thomas, Duncan, Dante Contreras, and Elizabeth Frankenberg. 1999. *Distribution of Power within the Household and Child Health*. Indonesian Family Life Survey (IFLS) Working Paper. http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.203.5217.

Van den Bold, Mara, Agnes R. Quisumbing, and Stuart Gillespie. 2013. *Women's Empowerment and Nutrition: An Evidence Review*. 01294. *IFPRI Discussion Paper*. IFPRI Discussion Paper. Washington, DC. doi:10.2139/ssrn.2343160.

Yoong, Joanne, Lila Rabinovich, and Stephanie Diepeveen. 2012. *The Impact of Economic Resource Transfers to Women versus Men: A Systematic Review*. London. http://eppi.ioe.ac.uk/cms/LinkClick.aspx?fileticket=q7MJCBgRUsQ=&tabid=3306&mid=6204.

Figures

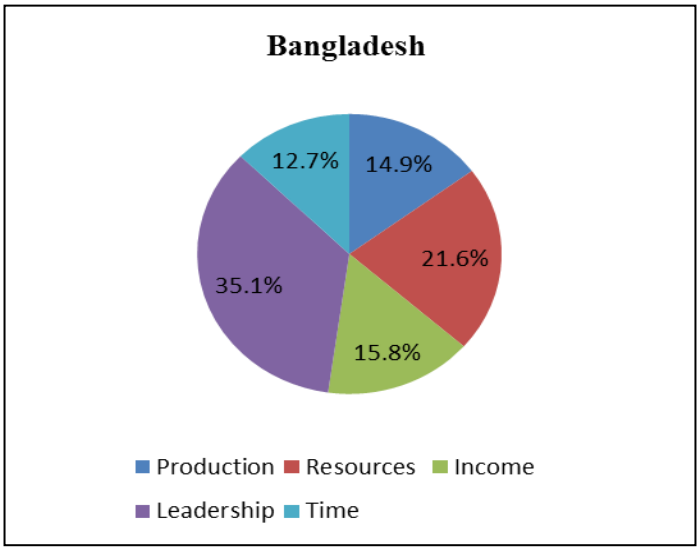

Figure 1. **Contribution of each of the 5 domains to the disempowerment of women**
Source: Sraboni, Quisumbing, and Ahmed (2013).

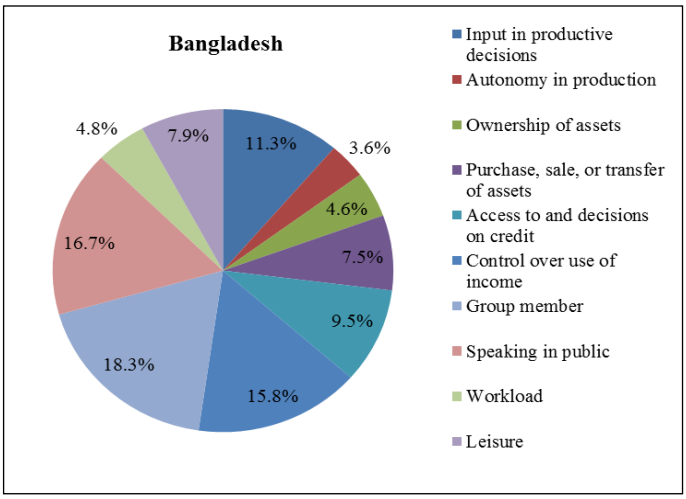

Figure 2. **Contribution of each of the 10 domain indicators to disempowerment of women**
Source: Sraboni, Quisumbing, and Ahmed (2013).

Tables

Table 1. The five domains of empowerment in the WEAI

Domain	Indicator	Definition of indicator	Weight
Production	Input in productive decisions	Sole or joint decisionmaking over food and cash-crop farming, livestock, and fisheries	1/10
	Autonomy in production	Autonomy in agricultural production (e.g., what inputs to buy, crops to grow, what livestock to raise, etc.). Reflects the extent to which the respondent's motivation for decisionmaking reflects his/her values rather than a desire to please others or avoid harm.	1/10
Resources	Ownership of assets	Sole or joint ownership of major household assets	1/15
	Purchase, sale, or transfer of assets	Whether respondent participates in decision to buy, sell, or transfer his/her owned assets	1/15
	Access to and decisions on credit	Access to and participation in decisionmaking concerning credit	1/15
Income	Control over use of income	Sole or joint control over income and expenditures	1/5
Leadership	Group member	Whether respondent is an active member in at least one economic or social group (e.g., agricultural marketing, credit, water users' groups)	1/10
	Speaking in public	Whether the respondent is comfortable speaking in public concerning various issues such as intervening in a family dispute, ensure proper payment of wages for public work programs, etc.	1/10
Time	Workload	Allocation of time to productive and domestic tasks	1/10
	Leisure	Satisfaction with the available time for leisure activities	1/10

Source: Alkire et al. (2013).

Table 2. Summary Statistics

To be completed.

Table 3: Under five children's height-for-age z-scores and measures of male-female difference in empowerment

	Dependent variable: height-for-age z-scores													
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	empowerment score		group membership		credit decisions		asset ownership		asset decisions		ladder score		satisfaction score	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Child characteristics														
=1 if female	-0.024	-0.157	-0.028	0.238	-0.007	-0.057	-0.051	-0.394	-0.045	-0.371	-0.049	0.023	-0.044	-0.103
	(0.213)	(0.273)	(0.211)	(0.383)	(0.210)	(0.233)	(0.234)	(0.547)	(0.223)	(0.434)	(0.212)	(0.228)	(0.209)	(0.239)
=1 if under two	-0.442***	-0.465***	-0.454***	-0.499***	-0.454***	-0.465***	-0.444***	-0.421***	-0.448***	-0.445***	-0.446***	-0.466***	-0.445***	-0.413***
	(0.155)	(0.156)	(0.155)	(0.167)	(0.155)	(0.157)	(0.154)	(0.161)	(0.155)	(0.156)	(0.155)	(0.157)	(0.155)	(0.160)
age in months	-0.087***	-0.088***	-0.088***	-0.090***	-0.088***	-0.088***	-0.087***	-0.088***	-0.087***	-0.089***	-0.087***	-0.090***	-0.088***	-0.083***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.013)	(0.012)	(0.013)	(0.012)	(0.012)	(0.012)	(0.013)	(0.012)	(0.013)
age in months squared	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
=1 if child of WEAI respondent	-0.117	-0.187	-0.124	-0.120	-0.127	-0.179	-0.130	-0.090	-0.131	-0.145	-0.139	-0.126	-0.132	-0.146
	(0.193)	(0.201)	(0.194)	(0.196)	(0.194)	(0.211)	(0.194)	(0.201)	(0.194)	(0.196)	(0.194)	(0.194)	(0.194)	(0.193)
Empowerment measures														
M-F difference in empowerment measure	-0.005	0.126	-0.097	-0.596	0.057	-0.266	0.005	0.039	-0.000	-0.008	-0.009	0.069	-0.011	-0.072
	(0.205)	(1.263)	(0.092)	(0.797)	(0.056)	(0.393)	(0.025)	(0.114)	(0.006)	(0.022)	(0.026)	(0.105)	(0.020)	(0.142)
M-F difference in age	-0.020	-0.019	-0.019	-0.017	-0.021	-0.016	-0.020	-0.017	-0.020	-0.019	-0.020	-0.023	-0.020	-0.017
	(0.016)	(0.017)	(0.016)	(0.017)	(0.016)	(0.017)	(0.016)	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.017)
M-F difference in education	0.001	0.001	0.001	0.009	-0.000	0.005	0.001	0.006	0.001	0.007	0.001	-0.003	0.001	0.006
	(0.019)	(0.021)	(0.019)	(0.021)	(0.019)	(0.020)	(0.020)	(0.022)	(0.020)	(0.022)	(0.019)	(0.020)	(0.019)	(0.020)
Interaction of child sex with empowerment measures														
female*M-F difference in empowerment	-0.242	0.843	0.091	1.015	-0.166**	0.091	-0.001	0.098	-0.001	0.030	-0.008	-0.152	-0.010	0.210
	(0.270)	(1.721)	(0.119)	(1.003)	(0.075)	(0.528)	(0.032)	(0.159)	(0.007)	(0.039)	(0.037)	(0.140)	(0.026)	(0.263)
female*M-F difference in age	0.002	-0.002	0.000	-0.009	0.002	-0.000	0.001	0.001	0.001	0.001	0.001	0.005	0.000	0.001
	(0.019)	(0.020)	(0.019)	(0.022)	(0.019)	(0.019)	(0.019)	(0.018)	(0.019)	(0.019)	(0.019)	(0.018)	(0.019)	(0.020)
female*M-F difference in education	-0.015	-0.020	-0.017	-0.022	-0.014	-0.017	-0.015	-0.016	-0.016	-0.023	-0.015	-0.007	-0.017	-0.017
	(0.023)	(0.025)	(0.023)	(0.024)	(0.023)	(0.024)	(0.023)	(0.026)	(0.023)	(0.025)	(0.023)	(0.024)	(0.023)	(0.024)

	Dependent variable: height-for-age z-scores													
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	empowerment score		group membership		credit decisions		asset ownership		asset decisions		ladder score		satisfaction score	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Household head characteristics														
age of household head	0.024	0.024	0.023	0.021	0.024	0.022	0.024	0.021	0.024	0.021	0.024	0.026	0.024	0.024
	(0.021)	(0.022)	(0.021)	(0.023)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.022)	(0.021)	(0.021)	(0.021)	(0.021)
age squared of household head	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
education of household head	0.047***	0.046***	0.048***	0.046***	0.048***	0.049***	0.047***	0.041***	0.047***	0.045***	0.048***	0.047***	0.048***	0.043***
	(0.013)	(0.013)	(0.013)	(0.015)	(0.013)	(0.013)	(0.013)	(0.014)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.015)
N	1,756	1,756	1,756	1,756	1,756	1,756	1,756	1,756	1,756	1,756	1,756	1,756	1,756	1,756
F	4.724	4.626	4.859	4.750	4.752	4.756	4.682	4.585	4.681	4.724	4.704	4.656	4.722	4.382
Hansen J p, Ho: instruments valid		0.774		0.769		0.719		0.751		0.737		0.795		0.827
Under ID test p, Ho: underidentified		0.000		0.007		0.041		0.000		0.001		0.000		0.327
Weak ID test stat (Kleibergen-Paap Wald F)		9.406		2.172		2.023		7.774		3.798		9.375		1.041
Anderson-Rubin, Ho: endogvars irrelevant														
A-R Wald test, p-value		0.794		0.794		0.794		0.794		0.794		0.794		0.794
A-R Wald Chi2 test, p-value		0.780		0.780		0.780		0.780		0.780		0.780		0.780
Endogeneity test p, Ho: exogenous		0.655		0.754		0.708		0.930		0.847		0.511		0.513

note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

Table 4: Under five children's weight-for-height z-scores and measures of male-female difference in empowerment

	Dependent variable: weight-for-height z-scores													
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	empowerment score		group membership		credit decisions		asset ownership		asset decisions		ladder score		satisfaction score	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Child characteristics														
=1 if female	0.071	0.378	0.121	-0.307	0.059	0.327	0.152	0.865*	0.104	0.971**	0.067	0.037	0.078	0.126
	(0.169)	(0.235)	(0.169)	(0.314)	(0.164)	(0.222)	(0.188)	(0.478)	(0.176)	(0.412)	(0.166)	(0.172)	(0.166)	(0.200)
=1 if under two	-0.228*	-0.204	-0.236*	-0.152	-0.220*	-0.246*	-0.222*	-0.214	-0.230*	-0.212	-0.223*	-0.217*	-0.210	-0.271*
	(0.131)	(0.136)	(0.132)	(0.144)	(0.131)	(0.146)	(0.131)	(0.136)	(0.131)	(0.136)	(0.132)	(0.131)	(0.131)	(0.143)
age in months	-0.015	-0.014	-0.015	-0.012	-0.015	-0.018	-0.014	-0.011	-0.015	-0.009	-0.014	-0.014	-0.014	-0.021*
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.012)	(0.011)	(0.011)	(0.011)	(0.012)	(0.011)	(0.011)	(0.011)	(0.013)
age in months squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	-0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
=1 if child of WEAI respondent	0.049	0.150	0.056	0.019	0.062	0.129	0.049	0.006	0.054	0.084	0.043	0.045	0.044	0.071
	(0.164)	(0.173)	(0.165)	(0.177)	(0.165)	(0.178)	(0.165)	(0.175)	(0.164)	(0.171)	(0.165)	(0.164)	(0.164)	(0.174)
Empowerment measures														
M-F difference in empowerment measure	0.053	1.012	-0.115	0.888	0.050	0.615*	0.014	0.063	-0.001	0.032*	-0.018	-0.037	-0.053***	0.100
	(0.175)	(1.063)	(0.076)	(0.700)	(0.043)	(0.321)	(0.022)	(0.093)	(0.005)	(0.018)	(0.024)	(0.081)	(0.017)	(0.124)
M-F difference in age	0.011	0.006	0.011	0.006	0.010	0.002	0.011	0.009	0.011	0.008	0.011	0.012	0.012	0.008
	(0.011)	(0.011)	(0.011)	(0.012)	(0.011)	(0.013)	(0.011)	(0.011)	(0.011)	(0.012)	(0.011)	(0.011)	(0.011)	(0.012)
M-F difference in education	0.012	0.003	0.014	0.003	0.012	-0.000	0.011	-0.003	0.012	-0.009	0.012	0.014	0.015	0.006
	(0.014)	(0.017)	(0.014)	(0.018)	(0.014)	(0.017)	(0.014)	(0.017)	(0.014)	(0.019)	(0.014)	(0.015)	(0.014)	(0.017)
Interaction of child sex with empowerment measures														
female*M-F difference in empowerment	0.002	-2.548*	0.172*	-1.326	0.027	-1.017**	-0.025	-0.243*	-0.003	-0.085**	0.009	0.068	0.047**	-0.255
	(0.241)	(1.504)	(0.097)	(0.899)	(0.061)	(0.502)	(0.028)	(0.142)	(0.007)	(0.037)	(0.034)	(0.119)	(0.024)	(0.233)
female*M-F difference in age	-0.008	0.000	-0.010	0.004	-0.008	-0.001	-0.008	-0.008	-0.008	-0.008	-0.009	-0.010	-0.009	-0.009
	(0.013)	(0.014)	(0.013)	(0.016)	(0.013)	(0.015)	(0.013)	(0.013)	(0.013)	(0.014)	(0.013)	(0.013)	(0.013)	(0.014)
female*M-F difference in education	-0.024	-0.010	-0.025	-0.015	-0.024	-0.011	-0.022	-0.011	-0.024	-0.001	-0.024	-0.028	-0.027	-0.022
	(0.017)	(0.020)	(0.017)	(0.020)	(0.017)	(0.020)	(0.018)	(0.021)	(0.017)	(0.022)	(0.017)	(0.018)	(0.017)	(0.020)

	Dependent variable: weight-for-height z-scores													
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	empowerment score		group membership		credit decisions		asset ownership		asset decisions		ladder score		satisfaction score	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Household head characteristics														
age of household head	-0.003	0.000	-0.004	0.002	-0.003	-0.001	-0.003	0.002	-0.003	0.008	-0.003	-0.004	-0.003	-0.003
	(0.019)	(0.020)	(0.019)	(0.021)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.021)	(0.019)	(0.018)	(0.019)	(0.020)
age squared of household head	0.000	-0.000	0.000	-0.000	0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
education of household head	0.005	0.008	0.006	0.005	0.005	0.007	0.006	0.010	0.006	0.010	0.006	0.006	0.006	0.009
	(0.010)	(0.011)	(0.010)	(0.013)	(0.010)	(0.011)	(0.011)	(0.012)	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)	(0.013)
N	1,753	1,753	1,753	1,753	1,753	1,753	1,753	1,753	1,753	1,753	1,753	1,753	1,753	1,753
F	1.546	1.499	1.596	1.299	1.695	1.374	1.535	1.526	1.598	1.534	1.574	1.543	1.816	1.432
Hansen J p, Ho: instruments valid		0.150		0.147		0.255		0.148		0.389		0.059		0.178
Under ID test p, Ho: underidentified		0.000		0.007		0.039		0.000		0.001		0.000		0.361
Weak ID test stat (Kleibergen-Paaprk Wald F)		9.351		2.173		2.030		7.854		3.808		9.407		1.002
Anderson-Rubin, Ho: endogvars irrelevant														
A-R Wald test, p-value		0.043		0.043		0.043		0.043		0.043		0.043		0.043
A-R Wald Chi2 test, p-value		0.036		0.036		0.036		0.036		0.036		0.036		0.036
Endogeneity test p, Ho: exogenous		0.114		0.354		0.127		0.304		0.036		0.911		0.113

note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

Table 5: Under five children's weight-for-age z-scores and measures of male-female difference in empowerment

	Dependent variable: weight-for-age z-scores													
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	empowerment score		group membership		credit decisions		asset ownership		asset decisions		ladder score		satisfaction score	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Child characteristics														
=1 if female	0.012	0.073	0.035	-0.077	-0.001	0.130	0.040	0.268	0.012	0.354	-0.009	0.011	-0.001	-0.005
	(0.164)	(0.209)	(0.162)	(0.295)	(0.163)	(0.189)	(0.177)	(0.421)	(0.169)	(0.339)	(0.162)	(0.173)	(0.160)	(0.190)
=1 if under two	-0.175	-0.172	-0.189	-0.165	-0.178	-0.210*	-0.175	-0.163	-0.185	-0.179	-0.176	-0.184	-0.166	-0.201
	(0.117)	(0.118)	(0.117)	(0.128)	(0.117)	(0.124)	(0.117)	(0.120)	(0.117)	(0.119)	(0.117)	(0.118)	(0.116)	(0.123)
age in months	-0.029***	-0.029***	-0.029***	-0.029***	-0.029***	-0.032***	-0.029***	-0.027***	-0.029***	-0.027***	-0.029***	-0.030***	-0.028***	-0.031***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)
age in months squared	0.000*	0.000*	0.000**	0.000*	0.000**	0.000**	0.000*	0.000*	0.000*	0.000*	0.000*	0.000**	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
=1 if child of WEAI respondent	-0.027	-0.010	-0.028	-0.041	-0.030	-0.042	-0.038	-0.044	-0.034	-0.024	-0.048	-0.033	-0.042	-0.026
	(0.156)	(0.163)	(0.157)	(0.159)	(0.156)	(0.160)	(0.156)	(0.158)	(0.156)	(0.154)	(0.157)	(0.156)	(0.156)	(0.161)
Empowerment measures														
M-F difference in empowerment measure	0.026	0.267	-0.136**	0.152	0.043	0.073	0.009	0.049	-0.003	0.011	-0.017	0.024	-0.040**	0.057
	(0.162)	(0.952)	(0.064)	(0.602)	(0.042)	(0.279)	(0.019)	(0.084)	(0.004)	(0.016)	(0.020)	(0.078)	(0.016)	(0.110)
M-F difference in age	-0.006	-0.007	-0.005	-0.006	-0.006	-0.006	-0.005	-0.005	-0.006	-0.006	-0.005	-0.006	-0.005	-0.007
	(0.013)	(0.013)	(0.013)	(0.014)	(0.013)	(0.014)	(0.013)	(0.013)	(0.013)	(0.014)	(0.013)	(0.013)	(0.013)	(0.014)
M-F difference in education	0.004	0.002	0.005	0.002	0.003	0.001	0.003	-0.002	0.005	-0.004	0.004	0.003	0.006	0.001
	(0.014)	(0.015)	(0.014)	(0.015)	(0.014)	(0.015)	(0.014)	(0.017)	(0.014)	(0.017)	(0.014)	(0.014)	(0.014)	(0.014)
Interaction of child sex with empowerment measures														
female*M-F difference in empowerment	-0.188	-0.699	0.169**	-0.233	-0.048	-0.501	-0.016	-0.088	-0.002	-0.035	-0.003	-0.044	0.025	-0.086
	(0.216)	(1.271)	(0.083)	(0.761)	(0.056)	(0.416)	(0.024)	(0.123)	(0.005)	(0.031)	(0.028)	(0.109)	(0.021)	(0.215)
female*M-F difference in age	-0.005	-0.004	-0.007	-0.004	-0.006	-0.003	-0.006	-0.006	-0.006	-0.005	-0.006	-0.005	-0.007	-0.005
	(0.015)	(0.015)	(0.015)	(0.018)	(0.015)	(0.016)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.014)	(0.015)	(0.016)
female*M-F difference in education	-0.020	-0.017	-0.023	-0.020	-0.021	-0.015	-0.020	-0.014	-0.022	-0.012	-0.021	-0.019	-0.023	-0.019
	(0.017)	(0.018)	(0.016)	(0.017)	(0.016)	(0.018)	(0.017)	(0.020)	(0.017)	(0.019)	(0.016)	(0.018)	(0.016)	(0.018)

	Dependent variable: weight-for-age z-scores													
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	empowerment score		group membership		credit decisions		asset ownership		asset decisions		ladder score		satisfaction score	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Household head characteristics														
age of household head	0.008	0.009	0.007	0.009	0.008	0.008	0.009	0.010	0.008	0.012	0.008	0.009	0.008	0.008
	(0.018)	(0.019)	(0.018)	(0.020)	(0.018)	(0.019)	(0.018)	(0.019)	(0.019)	(0.020)	(0.018)	(0.018)	(0.018)	(0.019)
age squared of household head	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
education of household head	0.031***	0.031***	0.031***	0.031***	0.030***	0.033***	0.031***	0.031***	0.031***	0.032***	0.031***	0.030***	0.031***	0.031***
	(0.009)	(0.009)	(0.009)	(0.011)	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.011)
N	1,774	1,774	1,774	1,774	1,774	1,774	1,774	1,774	1,774	1,774	1,774	1,774	1,774	1,774
F	4.611	4.694	4.900	4.517	4.620	4.410	4.581	4.518	4.732	4.552	4.662	4.595	4.784	4.599
Hansen J p, Ho: instruments valid		0.604		0.603		0.758		0.652		0.687		0.634		0.652
Under ID test p, Ho: underidentified		0.000		0.005		0.038		0.000		0.003		0.000		0.427
Weak ID test stat (Kleibergen-Paaprk Wald F)		9.631		2.267		2.104		4.972		2.689		7.290		0.911
Anderson-Rubin, Ho: endogvars irrelevant														
A-R Wald test, p-value		0.709		0.709		0.709		0.709		0.709		0.709		0.709
A-R Wald Chi2 test, p-value		0.691		0.691		0.691		0.691		0.691		0.691		0.691
Endogeneity test p, Ho: exogenous		0.938		0.956		0.690		0.772		0.604		0.781		0.615

note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

Table 6: Education, deviation from cohort means, co-resident children aged 6-10

	Dependent variable: education, deviation from cohort means, co-resident children 6-10													
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	empowerment score		group membership		credit decisions		asset ownership		asset decisions		ladder score		satisfaction score	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Child characteristics														
=1 if female	0.097	0.065	0.107	0.285	0.102	0.118	0.055	-0.107	0.022	-0.058	0.099	0.081	0.101	0.210
	(0.092)	(0.142)	(0.090)	(0.195)	(0.090)	(0.112)	(0.103)	(0.271)	(0.098)	(0.199)	(0.090)	(0.097)	(0.090)	(0.168)
age in years	-0.095	-0.085	-0.087	-0.047	-0.091	-0.098	-0.087	-0.039	-0.085	-0.074	-0.091	-0.088	-0.091	-0.069
	(0.153)	(0.155)	(0.153)	(0.169)	(0.153)	(0.170)	(0.153)	(0.167)	(0.153)	(0.155)	(0.154)	(0.156)	(0.153)	(0.258)
age in years squared	0.006	0.005	0.006	0.003	0.006	0.006	0.005	0.002	0.005	0.004	0.006	0.005	0.006	0.004
	(0.010)	(0.010)	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.016)
=1 if child of WEAI respondent	0.181**	0.191**	0.185**	0.214**	0.181**	0.213**	0.185**	0.206**	0.183**	0.180**	0.184**	0.179**	0.185**	0.023
	(0.085)	(0.086)	(0.085)	(0.096)	(0.085)	(0.090)	(0.085)	(0.090)	(0.084)	(0.084)	(0.085)	(0.086)	(0.085)	(0.153)
Empowerment measures														
M-F difference in empowerment measure	0.038	-0.272	0.050	0.084	0.005	-0.066	0.001	0.107**	-0.004*	0.002	-0.008	-0.034	-0.008	0.317
	(0.102)	(0.509)	(0.043)	(0.338)	(0.028)	(0.265)	(0.011)	(0.052)	(0.003)	(0.010)	(0.015)	(0.071)	(0.010)	(0.199)
M-F difference in age	-0.004	-0.003	-0.004	-0.002	-0.004	-0.004	-0.004	-0.001	-0.004	-0.003	-0.004	-0.003	-0.004	0.004
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.010)
M-F difference in education	-0.002	-0.002	-0.001	0.005	-0.002	0.000	-0.001	0.002	-0.001	-0.002	-0.001	0.000	-0.001	-0.022
	(0.008)	(0.008)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)	(0.009)	(0.008)	(0.021)
Interaction of child sex with empowerment measures														
female*M-F difference in empowerment	0.079	0.280	0.014	0.773	0.019	-0.116	0.015	0.070	0.008**	0.016	0.019	0.069	0.008	0.131
	(0.141)	(0.869)	(0.061)	(0.706)	(0.036)	(0.347)	(0.014)	(0.076)	(0.003)	(0.017)	(0.019)	(0.082)	(0.014)	(0.299)
female*M-F difference in age	-0.002	-0.003	-0.002	-0.010	-0.002	0.000	-0.002	-0.003	-0.002	-0.003	-0.002	-0.004	-0.002	-0.013
	(0.008)	(0.009)	(0.008)	(0.011)	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.013)
female*M-F difference in education	-0.023**	-0.024**	-0.024**	-0.034**	-0.023**	-0.020	-0.024**	-0.028**	-0.025**	-0.026**	-0.024**	-0.027**	-0.024**	-0.007
	(0.011)	(0.011)	(0.011)	(0.014)	(0.011)	(0.013)	(0.011)	(0.012)	(0.011)	(0.011)	(0.011)	(0.012)	(0.011)	(0.023)
Household head characteristics														
age of household head	-0.001	-0.002	-0.001	-0.002	-0.001	-0.004	-0.002	-0.012	-0.002	-0.002	-0.001	-0.002	-0.001	0.002
	(0.012)	(0.013)	(0.012)	(0.013)	(0.012)	(0.013)	(0.013)	(0.014)	(0.012)	(0.013)	(0.013)	(0.013)	(0.012)	(0.019)
age squared of household head	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

	Dependent variable: education, deviation from cohort means, co-resident children 6-10													
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	empowerment score		group membership		credit decisions		asset ownership		asset decisions		ladder score		satisfaction score	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
education of household head	0.029***	0.029***	0.027***	0.019*	0.029***	0.028***	0.029***	0.027***	0.029***	0.029***	0.029***	0.028***	0.029***	0.023**
	(0.006)	(0.006)	(0.006)	(0.010)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.011)
N	2,308	2,308	2,308	2,308	2,308	2,308	2,308	2,308	2,308	2,308	2,308	2,308	2,308	2,308
F	4.634	4.614	4.650	3.982	4.608	4.523	4.650	4.129	4.719	4.493	4.635	4.607	4.638	1.854
Hansen J p, Ho: instruments valid		0.014		0.087		0.021		0.236		0.029		0.015		0.968
Under ID test p, Ho: underidentified		0.000		0.478		0.182		0.001		0.000		0.000		0.153
Weak ID test stat (Kleibergen-Paap Wald F)		6.253		1.032		1.253		9.893		5.498		16.085		1.791
Anderson-Rubin, Ho: endogvars irrelevant														
A-R Wald test, p-value		0.010		0.010		0.010		0.010		0.010		0.010		0.010
A-R Wald Chi2 test, p-value		0.008		0.008		0.008		0.008		0.008		0.008		0.008
Endogeneity test p, Ho: exogenous		0.932		0.194		0.887		0.061		0.216		0.972		0.001

note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

Table 7: Education, deviation from cohort means, co-resident children aged 11-17

	Dependent variable: education, deviation from cohort means, co-resident children 11-17													
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	empowerment score		group membership		credit decisions		asset ownership		asset decisions		ladder score		satisfaction score	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Child characteristics														
=1 if female	0.582***	0.752**	0.576***	0.885**	0.567***	0.575**	0.428*	1.488	0.405*	0.333	0.569***	0.747***	0.567***	0.603*
	(0.202)	(0.301)	(0.204)	(0.360)	(0.203)	(0.288)	(0.229)	(1.084)	(0.214)	(0.739)	(0.203)	(0.270)	(0.203)	(0.334)
age in years	-0.040	0.081	-0.037	0.286	-0.094	-0.093	-0.108	-0.093	-0.087	-0.075	-0.113	-0.013	-0.034	0.642
	(0.690)	(0.701)	(0.690)	(0.759)	(0.690)	(0.697)	(0.691)	(0.741)	(0.691)	(0.690)	(0.691)	(0.734)	(0.694)	(1.396)
age in years squared	0.002	-0.003	0.002	-0.010	0.005	0.005	0.005	0.004	0.004	0.004	0.005	0.001	0.002	-0.024
	(0.027)	(0.027)	(0.027)	(0.029)	(0.027)	(0.027)	(0.027)	(0.029)	(0.027)	(0.027)	(0.027)	(0.028)	(0.027)	(0.054)
=1 if child of WEAI respondent	0.728***	0.673***	0.745***	0.753***	0.748***	0.746***	0.759***	0.743***	0.764***	0.769***	0.739***	0.744***	0.742***	0.729***
	(0.228)	(0.233)	(0.229)	(0.230)	(0.230)	(0.232)	(0.231)	(0.281)	(0.230)	(0.243)	(0.229)	(0.243)	(0.231)	(0.249)
Empowerment measures														
M-F difference in empowerment measure	-0.443*	-0.530	-0.154	-1.723**	-0.037	-0.004	0.005	0.384*	-0.006	-0.027	-0.055	0.361	0.019	0.302
	(0.251)	(1.554)	(0.105)	(0.683)	(0.069)	(0.457)	(0.026)	(0.201)	(0.006)	(0.045)	(0.035)	(0.290)	(0.025)	(0.400)
M-F difference in age	0.001	-0.001	0.001	0.007	0.001	0.001	0.001	0.021	-0.000	-0.004	0.002	-0.007	0.001	-0.004
	(0.015)	(0.015)	(0.015)	(0.016)	(0.015)	(0.015)	(0.015)	(0.021)	(0.015)	(0.017)	(0.015)	(0.017)	(0.015)	(0.018)
M-F difference in education	-0.098***	-0.102***	-0.102***	-0.123***	-0.098***	-0.099***	-0.097***	-0.092***	-0.098***	-0.096***	-0.096***	-0.125***	-0.101***	-0.132***
	(0.024)	(0.026)	(0.024)	(0.028)	(0.024)	(0.027)	(0.024)	(0.029)	(0.023)	(0.024)	(0.024)	(0.033)	(0.024)	(0.049)
Interaction of child sex with empowerment measures														
female*M-F difference in empowerment	-0.165	-1.880	0.024	0.943	-0.011	-0.036	0.037	-0.239	0.014	0.020	0.019	-0.456	-0.017	-0.284
	(0.338)	(2.404)	(0.132)	(0.953)	(0.086)	(0.772)	(0.033)	(0.284)	(0.008)	(0.061)	(0.045)	(0.374)	(0.031)	(0.460)
female*M-F difference in age	-0.000	0.008	-0.002	-0.004	-0.002	-0.002	-0.001	-0.014	-0.000	0.002	-0.003	0.006	-0.002	0.003
	(0.017)	(0.020)	(0.017)	(0.020)	(0.017)	(0.017)	(0.017)	(0.023)	(0.017)	(0.020)	(0.017)	(0.019)	(0.017)	(0.021)
female*M-F difference in education	0.013	0.023	0.013	0.016	0.012	0.013	0.011	0.018	0.010	0.010	0.010	0.047	0.014	0.040
	(0.026)	(0.031)	(0.026)	(0.029)	(0.026)	(0.031)	(0.026)	(0.030)	(0.026)	(0.028)	(0.026)	(0.040)	(0.026)	(0.045)
Household head characteristics														
age of household head	0.087**	0.089**	0.087**	0.075*	0.086*	0.087*	0.086*	0.087*	0.086**	0.080*	0.090**	0.088*	0.088**	0.092**
	(0.043)	(0.043)	(0.043)	(0.043)	(0.044)	(0.048)	(0.044)	(0.053)	(0.043)	(0.045)	(0.043)	(0.046)	(0.044)	(0.045)
age squared of household head	-0.001*	-0.001*	-0.001*	-0.001*	-0.001*	-0.001*	-0.001*	-0.001	-0.001*	-0.001*	-0.001*	-0.001*	-0.001*	-0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

	Dependent variable: education, deviation from cohort means, co-resident children 11-17													
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	empowerment score		group membership		credit decisions		asset ownership		asset decisions		ladder score		satisfaction score	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
education of household head	0.146***	0.152***	0.149***	0.181***	0.145***	0.145***	0.143***	0.135***	0.144***	0.144***	0.146***	0.142***	0.145***	0.148***
	(0.014)	(0.016)	(0.014)	(0.023)	(0.014)	(0.015)	(0.014)	(0.018)	(0.014)	(0.014)	(0.014)	(0.015)	(0.014)	(0.015)
N	1,911	1,911	1,911	1,911	1,911	1,911	1,911	1,911	1,911	1,911	1,911	1,911	1,911	1,911
F	14.153	13.284	14.100	12.426	14.071	13.974	14.233	13.343	14.229	13.671	14.255	12.970	14.015	13.010
Hansen J p, Ho: instruments valid		0.001		0.006		0.000		0.007		0.000		0.001		0.001
Under ID test p, Ho: underidentified		0.000		0.013		0.017		0.224		0.010		0.004		0.828
Weak ID test stat (Kleibergen-Paap Wald F)		5.479		2.265		2.140		1.906		2.742		2.394		0.512
Anderson-Rubin, Ho: endogvars irrelevant														
A-R Wald test, p-value		0.000		0.000		0.000		0.000		0.000		0.000		0.000
A-R Wald Chi2 test, p-value		0.000		0.000		0.000		0.000		0.000		0.000		0.000
Endogeneity test p, Ho: exogenous		0.423		0.050		0.956		0.105		0.683		0.370		0.821

note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.