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Women's Decision Making Power and Human Development

Evidence from Pakistan

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Abstract

When deciding who should receive welfare benefits with the aim to increase household well-being, it is necessary to understand the effects of the distribution of power within the households at which the aid is directed. Two primary household models have been used to study intra-household bargaining and decision making: the unitary model and the collective model. The unitary model seems to fit Pakistan's context because the prevailing traditional culture positions the male head as the household decision maker. However, using a set of direct measures of decision-making power from the Pakistan Social and Living Standard Measurement Survey, this study finds that even in a country where men seem to have more power than women, the collective household bargaining model applies. This study also finds that, in Pakistan, when women have more decision-making power at home, households tend to spend more on women's preferred goods (such as clothing and education), family members eat more non-grain food items, and children, particularly girls, are more likely to be enrolled in school.

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Women's Decision Making Power and Human Development

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1. Introduction

Households are central to most policy initiatives aimed at reducing poverty because a significant portion of economic activity occurs within households. A clear understanding of the ways in which households make decisions is critical to the effective implementation of anti-poverty programs. This is particularly important in developing countries since significant efforts go toward seeking the most efficient and effective ways to transfer income and other resources to poor households.

When deciding who should receive welfare benefits with the aim to increase household well-being, it is necessary to understand the effect of the distribution of power within the households at which the aid is directed. Two household models have been used to study intra-household bargaining and the decisions on child schooling, labor, and the allocation of consumption expenditures between private and public goods: classic unitary models and newer collective models. The former models are typically based on the notion that household preferences can be characterized by a single utility function; they assume either that there is a dictator or that household members have the same preferences and pool their resources to maximize the single utility function (Becker 1981). The collective models assume that different household members have distinct preferences and that final decisions fall somewhere along the spectrum between full cooperation and conflict, particularly when male and female heads of household are the decision makers (McElroy and Horney 1990; Chiappori 1992; Basu 2006).

In Pakistan, the unitary model would seem to fit because the prevailing traditional cultural restrictions on women (Amin 1995; Hakim and Aziz 1998) often position the male head as the household decision maker. However, with economic growth and efforts to empower women in Pakistan in recent years, women's roles have improved both within and outside households.

More women are getting education and are more involved in their employment decisions. Thus, in this context, a collective model is also plausible and the household human development investment is a function of women's decision making power.

One essential element of examining the association between women's decision making power and human development investment is how to measure decision-making power. In the economic literature, decision-making and bargaining power are measured by the relative income of the male and female heads of household or by the ratio of number of school years completed by female to male head of household. The underlying assumption is that women who bring more income to households or women with a higher level of education are more likely to have greater bargaining power at home. However, these measures are often endogenous because income and education are major determinants of the budget share. On the other hand, the social science literature takes a much broader view on measurement of decision-making power; for example, Adato and others (2003) suggested that each member's bargaining power is based on four factors: control over resources, influence over the bargaining process, interpersonal networks, and basic attitudinal attributes.

One contribution of this study is the ability to use a set of more direct measures of decision-making power from the Pakistan Social and Living Standard Measurement Survey, which asks directly who in the household makes decisions on key issues, such as women's education and employment, the use of birth control, the number of children, and expenditures. These questions capture factors embedded in the bargaining process that income or education alone could not capture.

The study further examines the relationship between women's decision-making power and some human development indicators, such as caloric availability and children's education. The conventional assumption is that women have stronger preferences for child schooling, are more concerned about health outcomes, and tend to spend on collective consumption items such as food. These assumptions hold true in some empirical examinations, but recent work has challenged some of them (Felkey 2005; Basu 2006; Lancaster, Maitra et al. 2006). Basu (2006), using an intra-household theoretical framework, shows that if the woman has more decision-making power than the man, the woman will have access to a greater share of the income produced by child labor and thus benefit from child labor. School enrollment might therefore decline as a result of increased child labor. Empirically, Maitra and Ray (2006) find that, in South Africa, there is no clear evidence that the identity of income earners affects household expenditures; and Felkey (2005) suggests that, in Bulgaria, the relationship between women's bargaining power and household well-being is not monotonic.

This study finds that in Pakistan, when women have more decision-making power at home, households tend to spend more on women's preferred goods (such as clothing and education), families eat more non-grain food items, and children, particularly girls, are more likely to be enrolled in school.

The paper is organized as follows. Section 2 explains the estimation strategies; section 3 describes the data and variables; section 4 presents the results; and section 5 concludes.

2. The Estimation Strategy

I first tested whether the unitary or the collective model applies to Pakistan's context. To achieve that objective, I follow Lancaster et al. (2005)[2] and conduct a joint Wald test of the null hypotheses in the following household budget share equation (1).

$$b^g = \alpha_0^g + \alpha_1^g \theta_w + \beta_m^g \theta_w{}^2 \mu + \beta_w^g (1-\theta_w)^2 \mu + \gamma^g \log(n) + \sum_{k=1}^{K} \varphi_k^g \left(\frac{n_k}{n}\right) + \varepsilon^g$$

$$g = 1, \ldots, G \qquad , \tag{1}$$

in which b^g is the budget share of good g, θ_w is women's decision-making power, μ is household income, n is household size, and n_k is the number of household members in the age-sex class k. Additional details can be found in Lancaster et al (2005). In essence, the unitary model assumes that the decision-making power attached to each individual does not affect household expenditures; thus θ does not have any effect on the household expenditure patterns. This implies that

$$\alpha_1^g = 0$$

$$\beta_m^g \theta_w = \beta_w^g (1-\theta_w) \qquad (2)$$

If the above null hypotheses are rejected, the unitary model is rejected. It should also be noted that the test of the hypothesis must be conducted at different values of θ_w, because the hypothesis is data dependent. Lancaster et al (2005) extend the collective approach to household behavior by using and estimating a model in which the decision-making power attached to individuals is endogenously determined. Following their approach, I also use three-stage least squares (3SLS) to jointly estimate women's power, per capita household expenditure, and budget

[2] In Lancaster et al. (2005), θ_w is measured by relative income. $\theta_w \mu$ is thus interpreted as women's income. In this paper, θ_w is the direct measure of women's decision-making power, $\theta_w \mu$ is interpreted as income or expenditures under women's control.

shares spent on individual items in order to account for the potential endogeneity. The 3SLS system equations are as follows:

$$\theta_w = \theta_w(X_1, Exp) + v_1$$

$$Exp = Exp(X_2) + v_2$$

$$b^g = b^g(\theta, Exp, X_3) + v^g \quad , \qquad (3)$$

where *Exp* denotes per capita household expenditure, X_1, X_2 and X_3 are the vectors of exogenous determinants in the three equations, and v_1, v_2, and v^g are the stochastic error terms. The exogenous variables (X_1) in equation (3) include household size, household literature level as measured by the years of education of the most educated household member, and dummies for region; X_2 includes demographic and educational characteristics of the household head and household assets, and X_3 includes household size and household demographic composition variables.

I use per capita expenditure as a proxy for household income for two reasons. First, household income is often poorly measured in the survey data. Second, incomes of the poor in developing countries are often highly volatile due to factors such as the seasonality of agriculture and the sporadic nature of employment in the informal sector. However, household expenditure is unavoidably correlated with unobserved determinants of household budget shares and thus needs to be instrumented. θ_w is instrumented as well in order to estimate the causal relationship between θ_w and several dependent variables of interests (Friedberg and Webb 2006) because it is women's perceived decision-making power. For non-budget share variables such as caloric availability and child education, I just use the regression (equation 4) instead of the structural form to examine the correlation between women's decision making power and various human

development related indicators. The dependent variables thus are just a linear combination of related independent variables, including θ_w[3].

$$Y = \alpha_0 + \alpha_1 \theta_w + \beta X + \varepsilon , \qquad (4)$$

in which, Y is the outcome variables, X is a set of covariates and ε is the stochastic error term.

3. Data and Key Variables

3.1 Data

This study uses the Pakistan Social and Living Standards Measurement Survey (PSLM) 2005-06 to analyze the impact of women's decision-making power on household expenditures, the composition of caloric availability, and child education. PSLM is a large household survey on a range of social issues, including education, health, immunization, women's decision making, pre/postnatal care, and household consumption. The module on women's decision making applies only to married women age 15 through 49; thus this study can use only a subset of the whole sample.

More specifically, this study uses two samples to understand three different dimensions of human development in relation to women's decision-making power in Pakistan. The first sample is at the household level, restricted to households that include married women age 15 through 49; the dependent variables are budget share controlled by each household head and caloric availability, including calories from different sources. The sample size is 7,938 households. The

[3] Some recent literature (eg. Felkey A. J. (2005) and Basu K. (2006) and Lancaster et. al. (2006)) shows that the relationship between women's decision-making power and household outcomes is neither linear nor monotonic. Though the non-parametric graphical analysis in this paper shows non-monotonic relationship for a couple of outcome indicators, the parametric analysis assumes that the relationship is linear and monotonic.

second sample is at the individual level (children) and the dependent variable is the school enrollment of children age 5 through 15. The size of this sample is 17,696.

3.2. Construction of women's relative decision-making power (θ_w)

There are eight questions in the PSLM survey regarding women's decision making about their education, employment, use of birth control, having more children, and household food, clothing, medical treatment, and recreation expenditures for married women age 15 through 49. The answers to these questions are broadly categorized as "woman decides alone," "household head or husband decides alone," "household head or husband and woman decide jointly," and "other family members decide." A woman is considered to have decision-making power on a particular issue if she jointly or by herself makes the decision (equal to 1), since on at least some issues, such as birth control or number of children, women do not have to have the sole decision-making power. However, I have also done the calculations by assigning "jointly making the decision" a weight of 0.5 or 0, and the results are very similar and available upon request. Similar scales are also applied to the influential male household members. The results on distribution of women's decision-making power are quite striking (see Table 1). For decisions on women's own education, only 18% participated in this decision-making process (alone or in consultation with a male household member), but 86% of men in households participated in this decision (made the decision alone or in consultation with the woman). The results are very similar for decisions on women's employment. Women have more to say about expenditures on food and clothing, but men still play the major decision-making role on those and other expenditures, particularly medical and recreation expenditures. For decisions on birth control and having more children, most men and women participated in the decision-making process. For

example, 81% of men and 70% of women are involved in the decision making on whether to use birth control. Composite scores (ψ_w and ψ_m) are constructed with eight raw indicators for women and men separately, reflecting the degree of their autonomy. The scale for both scores ranges from 0 to 8, and the summary statistics are appended to the bottom of Table 1. Women's relative decision-making power (θ_w) is constructed using the share of the women's decision making ($\theta_{w=}\psi_w / (\psi_w+\psi_m)$).There are two traditional measures of relative spousal power. The first commonly used is the female income share. A number of studies find that female income share has a significant effect on household expenditure patterns. For example, Hoddinott and Haddad (1995) found that when women's share of household income increased, so did the budget share spent on food; and such households also spent less on more male-specific consumption items such as alcohol and cigarettes. Maitra and Ray (2002) found that the identity of the income earner has an important effect on expenditure share. However, as Basu (2006) points out, a measure based on income share might be endogenous to household decisions because a woman's earnings are dependent upon her representation in the labor force, which is a choice variable for households and is influenced by the household's decisions. In fact, the female labor force participation rate is very low (roughly 20 percent) in Pakistan, which makes using the earning share as a measure of women's decision-making power almost impossible in this context. The second measure is the relative years of education or share of years of education (Gitter and Barham 2008). These measures assume that as women's education level increases they are likely to have more decision-making power. I compare women's decision-making power θ_w with years of education share and find a high correlation between years of education share and θ_w. Figure 1 illustrates the relationship of these two measures in the household consumption sample. The relationship using the child sample shows a similar pattern, and the results are available upon

request. This paper argues that the direct measure θ_w is a better measure of women's decision making than relative years of education. First, the constructed measurement θ_w has more frequency variation than the relative years of education measure, particularly for households in which women have fewer years of education. In Figure 2, the dashed line describes the distribution of women's education share: there is a large percentage of women who have obtained little education, but women can still be very active in decision making even if they have little education. Second, share of education is a pre-existing condition, most likely before marriage, but women's bargaining is a more dynamic process after marriage. Therefore, θ_w is a more comprehensive and more contemporary measure of women's decision-making power.

4. Results

4.1 Unitary vs. collective model

The study first tests whether the unitary model is rejected in Pakistan. Given the religious and cultural tradition, men seem to have more power within the household. However, this might be just a natural (though not justifiable) extension of the well-known limitations on women's mobility; in most areas of Pakistan, women need to get permission from their husbands or male heads of households to pursue activities outside the household. Observations of households and casual communications with Pakistani families also reveal that men are likely to be in charge of more strategic household decisions while women are involved (at least) in decisions about daily life. This section tests the hypothesis that Pakistani households behave as a unitary model predicts – that the distribution of decision-making power within households has little impact on the share of the budget spent on a particular thing, such as food or health care. Following Lancaster (2005), if the hypothesis holds, the budget share spent will be determined by total household income, independent of bargaining power. Correspondingly, the sufficient condition

reflected in equation1 is $\alpha_1^g = 0$ and $\beta_m^g \theta w = \beta_w^g (1 - \theta w)$. These are jointly tested to ensure $\partial bg/\partial \theta = 0$. Table 1 shows the Wald test results given selected θ. A comparison with the critical ($\chi 2$) values among all budget share categories shows that the budget share is insensitive to household bargaining power. The results are consistent with previous evidence (Hoddinott and Haddad 1995; Lancaster, Maitra et al. 2006), suggesting that Pakistani households behave more as a collective model suggests.

4.2. Budget share and women's bargaining power

Figure 3 depicts the relationship between b^g and θ for the main expenditure categories, after controlling for per capita consumption. When women's bargaining power increases, households are more likely to spend on footwear and clothing, medical care, and education. The case is very strong for education expenditures, implying that women are more likely to be the advocates for education when they have more power. The overall relationship between fuel and lighting share and women's bargaining power indicates that when women have more dominant power in the household, households tend to spend more on fuel and lighting, but this is not the case when θ is small. One possible explanation is that since women are involved in cooking, when they have more decision-making power they are more likely to spend on fuel/lighting in order to make the activities they are primarily engaged more pleasant. In contrast, the share of household income spent on transportation is smaller when women are more dominant, mainly because the mobility of women in most areas of Pakistan is restricted. The descriptive analysis overall suggests that, when women have more decision-making power, household preferences shift from food and transportation to education, medical care, footwear and clothing, and fuel and lighting. Due to the presence of linear and quadratic terms involved in the budget share equation, it is not possible to infer the sensitivity of budget share to θ simply by examining the statistical

significance of the linear coefficient estimate. Thus I use the regression analysis to examine the linear relationship between the budget share and θ (Table3). The regression analysis produces results similar to those in Figure 3. When women's decision-making power increases, the share of the budget spent on footwear, clothing, and education increases. Different from the descriptive analysis, medical expenditures decrease when women's power increases. The amount spent on medical care is affected by the overall well-being of household members and the practice of the preventive measures. If greater decision-making power enables women to make better nutrition and hygiene choices and take more preventive measures in the households, the households need for medical care may decrease. The analysis by rural and urban areas reveals that the relationship between women's power and budget share is different in these two areas. For example, when women have more power, households in rural areas spend more on fuel and lighting; but in urban areas households spend more on transportation. This suggests that women are more likely to spend on the activities they are more engaged in when they gain more power. However, in both urban and rural areas households spend more on education when women have more power. The coefficient between food share and women's power is not significant for the overall sample and the rural sample, but it is negative for the urban sample. The literature contains different findings on this subject. For example, Hoddinott and Haddad (1995) finds that, in Cote d'Ivoire, women's income is positively correlated with household necessities (such as food) but negatively with alcohol and cigarettes. However, Lancaster et al. (2005) suggest that the budget share and the women's decision-making power is U-shaped instead of linear from their empirical analysis in India. Similarly, Maitra and Ray (2006) show that, in South Africa, it does not matter much who the income earner is for the purchase of food, clothing, and energy. In

the next subsection, this paper examines in more detail the relationship between women's decision-making power and caloric availability.

4.3. Caloric availability and women's bargaining power

Although the results presented so far show no significant association between food budget shares and women's power for the overall sample, this finding is not automatically linked to the relationship between women's power and food quantity and quality, which are more relevant to human development. Women may spend more efficiently on food consumption, purchasing more nutritious foods with less money, for example. Some evaluations of conditional cash transfer programs show that when women's power increases as cash transfers going directly to women, households consume more calories (Attanasio and Lechene 2002; Djebbari 2005) and more nutritious calories (Hoddinott 1996; Hou 2010).

This paper uses total caloric availability and caloric availability from different sources, such as calories from grains, calories from vegetables and fruits, calories from animal products, and calories from other sources to examine the relationship. Figure 4 shows the relationship between women's power and caloric availability after controlling for per capita expenditure. After controlling for per capita expenditure, when women's power increases, per capita calorie availability actually decreases. Calories from vegetables and fruits and calories from other sources increase, but calories from grains and animal products decrease.

After controlling for other variables, the regression analysis (Table 4) shows similar results except for per capita caloric availability from animal products, which shows a strong positive correlation with women's power. The breakdown of urban and rural analyses reveals similar relationships. These patterns suggest that when women have more power, households

tend to consume fewer but better calories—calories from a greater variety of sources, some of which are more nutritious—after controlling for household expenditures.

4.4 The impact of women's decision-making power on children's school enrollment

In this section, I examine the relationship between women's bargaining power and children's school enrollment. It is commonly believed that school enrollment increases if women become more powerful in the household decision-making process. However, some recent literature has challenged this view. Specifically, Basu's (2006) theoretical model argues that "if the woman has more decision-making power than the man, the woman will garner a greater share of the income produced by child labor and actually benefit from child labor." That non-linear prediction was further supported by some empirical evidence, including Felkey (2005) in Bulgaria, Lancaster et al. (2005) in three states of India, and Gitter and Barban (2008) in Nicaragua. Figure 5 clearly shows an upward linear relationship between women's decision-making power and child school enrollment. Such relationship by the non-parametric analysis is confirmed by the parametric analysis for which results are presented in Table 5. The finding is consistent with the classic views and the results of many empirical studies, including Schultz (1990) in Thailand, Thomas (1990) in Brazil, Binder (1999), and Adato et al. (2003) in Mexico. Table 5 also shows that when women have greater bargaining power, the girls are more likely than boys to be enrolled in school. Such gender-differentiated impacts are also consistent with the literature. For example, Thomas (1994) shows that Brazilian mothers' non-wage income positively affected their daughters' health but not their sons'. Duflo (2003) shows that in South Africa the impacts of exogenous income transfers in the form of old-age pensions were more likely to increase health outcomes of granddaughters of grandmothers than any other

grandparent–grandchild relation. This finding implies that women in Pakistan are more likely to invest in education, particularly girls' education, when they have more decision-making power.

5. Conclusions

The household is central to most policy initiatives aimed at reducing poverty. A clear understanding of the ways in which households make decisions is critical to the effective implementation of anti-poverty programs. Because a significant portion of economic activity occurs within the household, this is particularly important in developing countries, where there are efforts to seek the most efficient and effective ways to transfer income and other resources to poor households. Few studies have examined women's bargaining power and human development outcomes in cultures where men's power dominates and women are often perceived to have limited impacts on household decisions. Using data from Pakistan, this study finds that, similar to other countries, Pakistani households behave as a collective model would predict. Women participate in various decisions. The results that when women have more decision-making power, household investments shift from food and transportation to education, medical care, footwear and clothing, and fuel and lighting. The relationship between women's decision-making power and education expenditures appears particularly strong. The relationship between changes in women's power and changes in household expenditures differs slightly in rural and urban areas. For example, when rural women have more power, they tend to spend more on fuel and lighting, but women in urban households spend more on transportation. This result suggests that when women gain more power over decisions about household spending, they tend to spend more money on the activities they pursue the most. In both urban and rural areas, however, households spend more on education when women have more power.When women have more

power, households tend to consume better calories. Quality of food is as important as the quantity of food. When a women's decision making power increases, there is no significant difference in per capita calorie availability, after controlling for household expenditures. However, families eat more calories from foods like fruits and vegetables and less from grains. This is to say that when a woman has more decision-making power, households tend to consume better calories. Women's decision-making power on children's education is quite robust. In households where women have greater decision-making power, the share of household income spent on education and children's school enrollment is significantly higher, particularly for girls. The fact that women's decision-making power is positively associated with nutrition and child schooling is important in policy design. When deciding who should receive welfare benefits, with the aim to increase household well-being, it is necessary to understand the effect of power distribution within the households at which the aid is directed. To mitigate the impact of the 2008 food crisis, the government of Pakistan initiated the Benazir Income Support Program (BISP) to provide a safety net for the poor. This national cash transfer program provides Rs. 1,000 per month to ever married women of eligible families. The rationale for transferring cash directly to women relies on two assumptions: (1) as in other countries, giving cash directly to women can not only increase the total household income, but also increase women's bargaining power as the cash transfers are perceived to be women's additional income, and (2) higher women's decision power is associated with higher human development investment within households. This study tests the second assumption using the existing data to understand the relationship between women's bargaining power and some human development indicators, including nutrition and child education in Pakistan and the finding supports at least one aspect of the design of the program: transferring cash directly to women.

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Figure 1. Correlation between Women's Decision-making Power and Women's Education Share

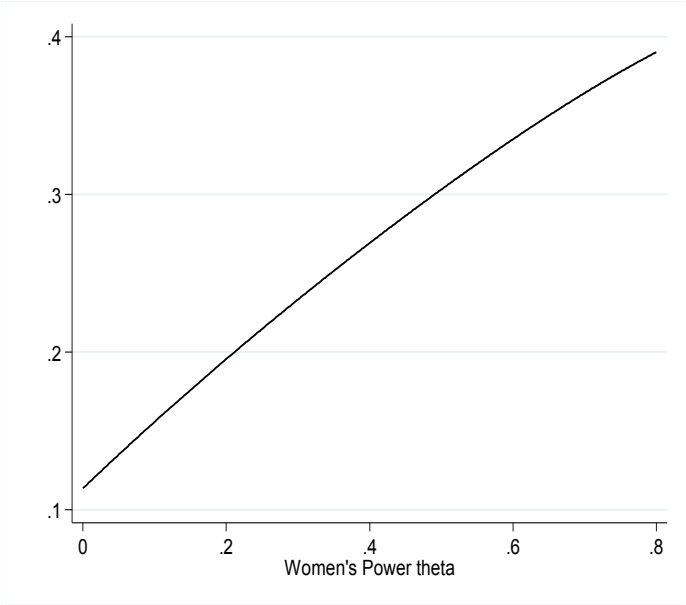


Figure 2. A Density Graph of Women's Decision-making Power (theta) and Women's Education Share

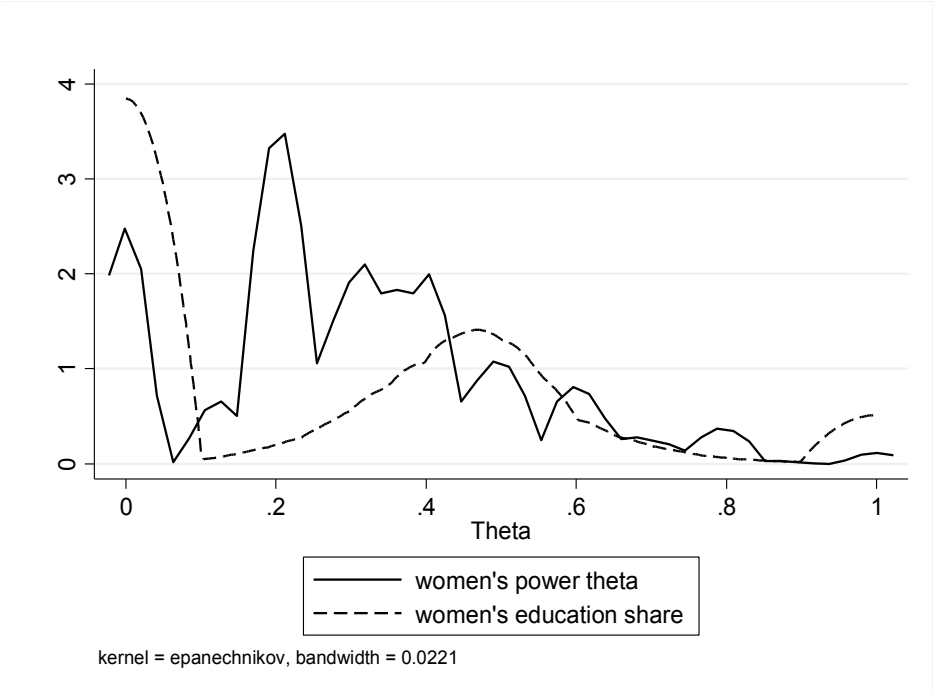
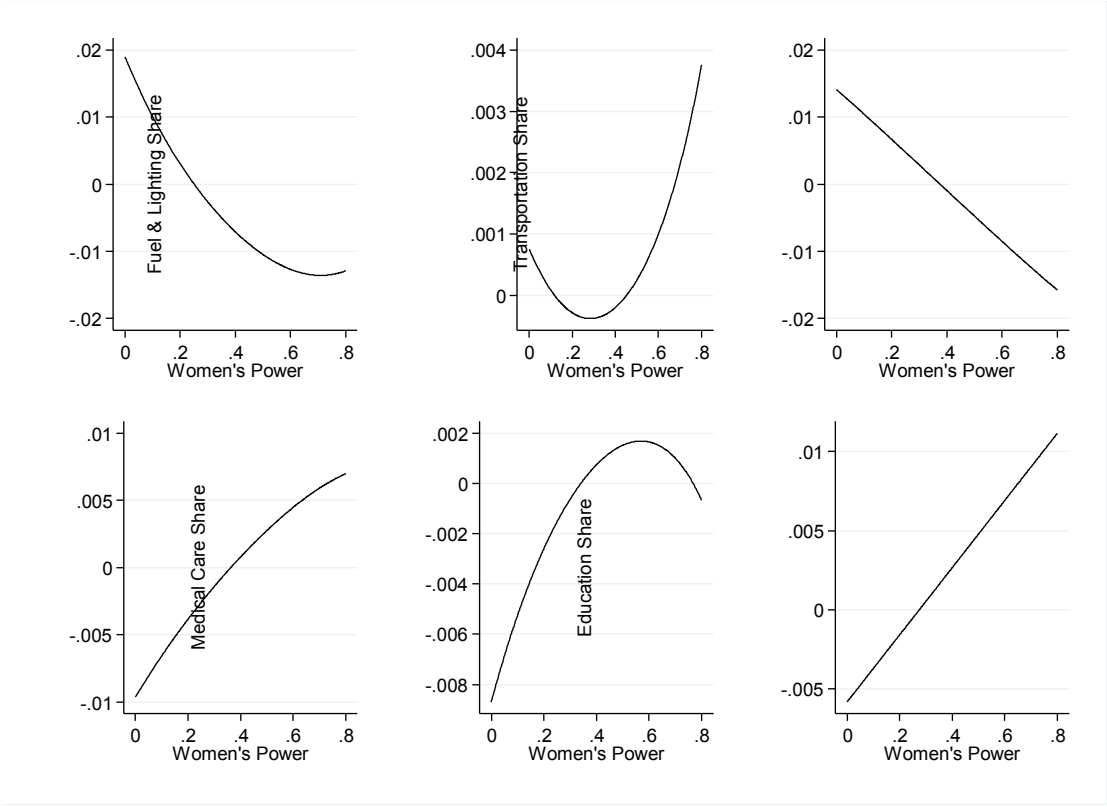
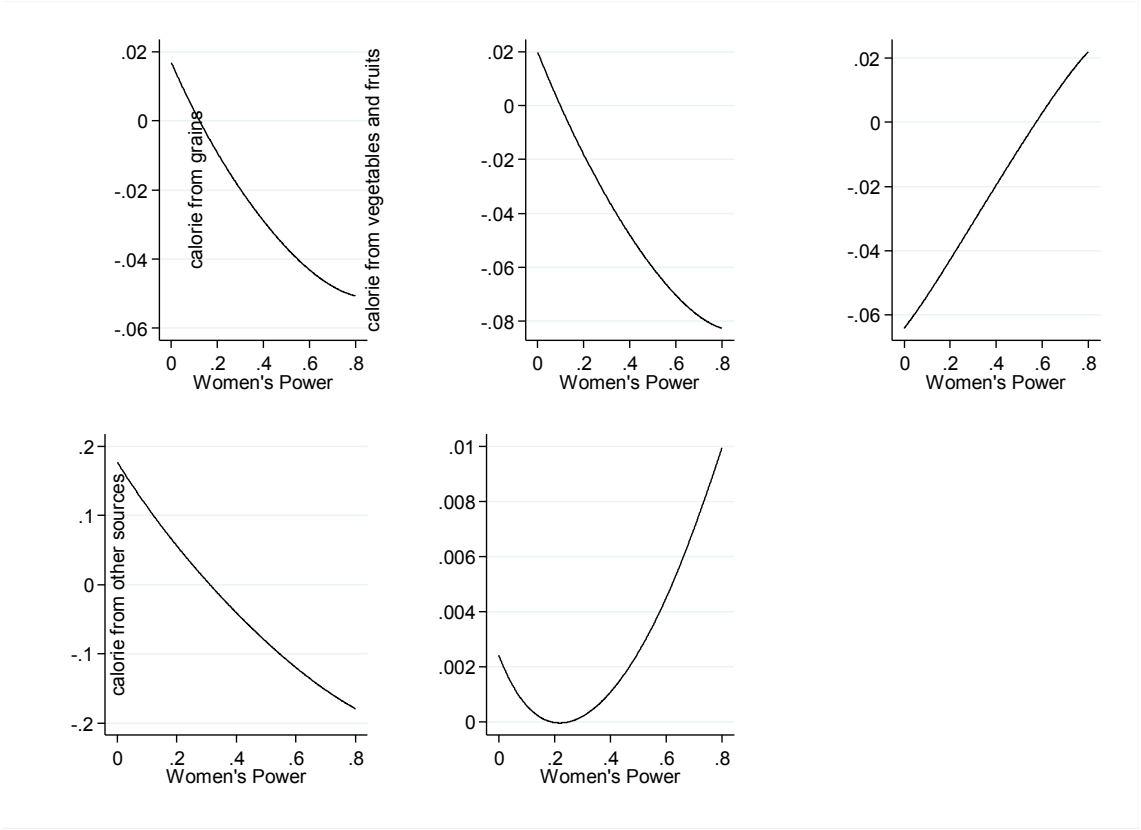


Figure 3. Women's Decision-making Power and Budget Share



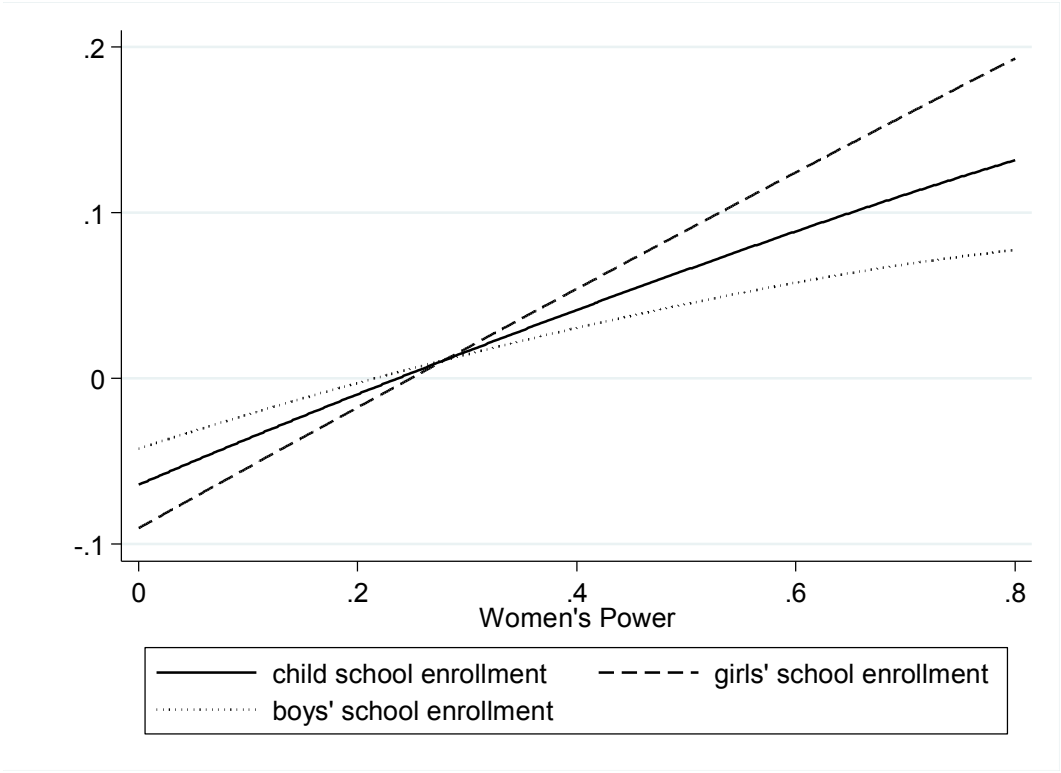
Note: Budget shares are the residual after controlling for log of household per capita expenditure.

Figure 4: Women's Decision-making Power and per Capita Caloric Availability



Note: Calorie availability is the residual after controlling for log of household per capita expenditure.

Figure 5. Women's Decision-making Power and Children's School Enrollment



Note: Child school enrollment variables are the residual after controlling for log of household per capita expenditure.

Table 1. Distribution of Household Decision-making Power

	Men		Women	
Decision	mean	sd	mean	sd
Women's education	0.86	0.35	0.18	0.39
Women's employment	0.87	0.34	0.17	0.38
Food expenditure	0.67	0.47	0.35	0.48
Clothing expenditure	0.65	0.48	0.41	0.49
Medical expenditure	0.84	0.37	0.29	0.45
Recreation expenditure	0.88	0.32	0.25	0.43
Birth control method	0.81	0.39	0.70	0.46
Having more children	0.87	0.34	0.75	0.43
Composite score	6.619	1.77	3.038	2.1
Sample size (households)	7,938			

Table 2: Structural Model Estimation of the Impact of Women's Decision-making Power on Budget Share

	Food	Fuel and lighting	Transportation	Food and clothing	Medical care	Education
Theta	-6.442***	-0.551***	1.897***	-0.369***	-0.566***	2.059***
	[0.217]	[0.063]	[0.088]	[0.041]	[0.087]	[0.084]
Theta(Theta * log of per capita expenditure)	0.403***	0.038***	-0.122***	0.022***	0.034***	-0.126***
	[0.015]	[0.004]	[0.006]	[0.003]	[0.006]	[0.006]
(1-Theta)(1-Theta) * log of per capita expenditure	-0.448***	-0.035***	0.131***	-0.027***	-0.040***	0.143***
	[0.015]	[0.004]	[0.006]	[0.003]	[0.006]	[0.006]
Ln (# of peple in HH)	-0.026***	-0.018***	0.004**	0.003***	0.002	0.020***
	[0.004]	[0.001]	[0.002]	[0.001]	[0.002]	[0.002]
Observations	7,919	7,919	7,919	7,919	7,919	7,919

Wald test	Food	Fuel and lighting	Transportation	Food and clothing	Medical care	Education
Theta=0	934.7c	108.5c	484.5c	129.1c	51.7c	644.1c
Theta=0.2	892.7c	129.4c	473.5c	113.2c	46.4c	608.3c
Theta=0.4	963.8c	139.2c	467.6c	82.2c	45.6c	743c
Theta=0.5	1067.8c	104.6c	485.6c	99.6c	55.1c	859.5c
Theta=0.6	1095.6c	84.3c	496.3c	118.5c	60c	872.5c
Theta=0.8	1081.8c	75.9c	501c	132.9c	61.6c	835.6c
Theta=1	1065.9c	76c	501c	136.8c	61.3c	809.4c

Note: 1. Absolute value of z statistics in brackets. 2. * significant at 10%; ** significant at 5%; *** significant at 1%. 3. Other variables controlled for but not presented include household size, demographic characteristics of household members, ownership of assets, and regional fixed effect.

Table 3. Regression Estimation of the Impact of Women's Decision-making power on Budget Share

	Food	F
Theta	-0.074	
	[0.056]	
Ln (# of peple in HH)	-0.010***	
	[0.004]	
Ln (per capita consumption expenditure)	-0.134***	
	[0.005]	
Observations	5,104	
Rural		
Theta	0.082	
	[0.082]	
Ln (# of peple in HH)	-0.001	
	[0.005]	
Ln (per capita consumption expenditure)	-0.149***	
	[0.009]	
Observations	2,546	
Urban		
Theta	-0.195***	
	[0.062]	
Ln (# of peple in HH)	-0.021***	
	[0.005]	
Ln (per capita consumption expenditure)	-0.128***	
	[0.005]	
Observations	2,558	

Note: 1. Absolute value of z statistics in brackets. 2. * significant at 10%; ** significant at 5%; *** significant at 1%. 3. Othe

Table 4. Regression Estimation of the Impact of Women's Decision-making Power on Caloric Availability

	Total Calories	Calories from grain	Calories from vegetables, fruits	Calories from animal products	Calories from other sources
Theta	-0.037	-0.175*	0.522***	1.189***	0.429***
	[0.071]	[0.099]	[0.116]	[0.199]	[0.070]
Ln (# of people in HH)	-0.069***	-0.016	-0.185***	-0.083***	-0.157***
	[0.008]	[0.011]	[0.014]	[0.022]	[0.008]
Ln (per capita consumption expenditure)	0.185***	-0.009	0.499***	0.863***	0.404***
	[0.010]	[0.014]	[0.016]	[0.026]	[0.010]
Observations	7,919	7,894	7,907	7,078	7,919
Rural					
Theta	-0.143*	-0.156	0.072	0.673**	0.095
	[0.085]	[0.116]	[0.146]	[0.267]	[0.082]
Ln (# of people in HH)	-0.053***	-0.007	-0.175***	-0.086***	-0.140***
	[0.010]	[0.014]	[0.017]	[0.029]	[0.010]
Ln (per capita consumption expenditure)	0.266***	0.099***	0.690***	0.979***	0.505***
	[0.016]	[0.022]	[0.028]	[0.048]	[0.016]
Observations	4,685	4,674	4,675	4,052	4,685
Urban					
Theta	-0.079	-0.564***	0.900***	1.646***	0.673***
	[0.116]	[0.163]	[0.177]	[0.285]	[0.118]
Ln (# of people in HH)	-0.095***	-0.037*	-0.187***	-0.050	-0.175***
	[0.014]	[0.020]	[0.022]	[0.034]	[0.014]
Ln (per capita consumption expenditure)	0.156***	-0.035*	0.417***	0.807***	0.358***
	[0.013]	[0.019]	[0.020]	[0.032]	[0.014]
Observations	3,234	3,220	3,232	3,026	3,234

Note: 1. Absolute value of z statistics in brackets. 2. * significant at 10%; ** significant at 5%; *** significant at 1%. 3. Other variables controlled for but not presented include household size, demographic characteristics of household members, , ownership of assets, and regional fixed effect.

Table 5. Regression Estimation of the Impact of Women's Decision-making Power on Child School Enrollment

	Children	Girls	Boys
Theta	0.489***	0.779***	0.237**
	[0.074]	[0.108]	[0.099]
Ln (per capita consumption expenditure)	0.400***	0.431***	0.367***
	[0.011]	[0.016]	[0.014]
Age	0.235***	0.213***	0.249***
	[0.008]	[0.011]	[0.010]
Ln (# of people in HH)	0.040***	0.019	0.053***
	[0.009]	[0.014]	[0.012]
Observations	17,696	8,569	9,127

Note: 1. Absolute value of z statistics in brackets. 2. * significant at 10%; ** significant at 5%; *** significant at 1%3. Other variables controlled for but not presented include child age, child age square, female, household size, demographic characteristics of household members, household's asset composition, and region fixed effect.

Appendix Table 1. Summary Statistics for Household Sample

Variable Name	Mean	SD
Theta	0.299	0.21
Food expenditure share	0.486	0.12
Fuel and lighting expenditure share	0.087	0.04
Transportation fee expenditure share	0.055	0.05
Foot and clothing expenditure share	0.061	0.03
Medical care expenditure share	0.043	0.06
Education expenditure share	0.027	0.05
Per capita total food caloric availability	1852.237	762.66
Per capita caloric availability from grains	1180.939	510.03
Per capita caloric availability from vegetables and fruits	51.768	70.33
Per capita caloric availability from animal products	25.353	24.83
Per capita caloric availability from other sources	600.725	485.03
Per equivalent adult expenditure (Rs.)	1743.577	1685.45
# of people in HH (members only)	7.468	3.61
Household highest no. of school years	8.08	5.15
Punjab	0.42	0.49
Sindh	0.249	0.43
NWFP	0.195	0.4
Rural	0.602	0.49
Household head age	45.135	13.49
Household head worked last month	0.829	0.38
Household head female	0.072	0.26
Household head married	0.919	0.27
Household head years of schooling	4.831	5.43
Agricultural land ownership	0.091	0.29
Ownership of buffalo/camel/horse/asses/ mules	0.201	0.4
Ownership of cattle/sheep/goat	0.221	0.41
Ownership of fridge/freezer	0.346	0.48
Ownership of air conditioner	0.156	0.36
Ownership of cooking stove	0.324	0.47
Ownership of TV	0.485	0.5
Ownership of car/truck	0.047	0.21
Ownership of motorcycle	0.131	0.34
Computer ownership	0.055	0.23
Ratio of female people between 0 and 5 years old in HH	0.08	0.11
Ratio of male people between 0 and 5 years old in HH	0.083	0.12
Ratio of female people between 5 and 15 years old in HH	0.126	0.14
Ratio of male people between 5 and 15 years old in HH	0.136	0.14
Ratio of female people between 15 and 55 years old in HH	0.268	0.13
Ratio of male people between 15 and 55 years old in HH	0.239	0.14
Ratio of female people older than 55 years old in HH	0.032	0.07
Sample size	7,938	

Appendix Table2. Summary Statistics for Child Sample

Variable Name	Mean	SD
Theta	0.286	0.21
Child enrollment status	0.625	0.48
Per equivalent adult expenditure	1472.118	1306.32
Child's age	9.436	3.11
Child's age^2/100	0.987	0.62
Girl	0.484	0.5
# of people in HH (members only)	9.368	4.74
Household highest no. of school years	7.904	4.83
Punjab	0.366	0.48
Sindh	0.243	0.43
NWFP	0.23	0.42
Rural	0.627	0.48
Household head age	44.869	11.83
Household head worked last month	0.852	0.36
Household head female	0.067	0.25
Household head married	0.945	0.23
Household head years of schooling	4.493	5.32
Agricultural land ownership	0.089	0.28
Ownership of buffalo/camel/horse/asses/ mules	0.216	0.41
Ownership of cattle/sheep/goat	0.247	0.43
Ownership of fridge/freezer	0.331	0.47
Ownership of air conditioner	0.14	0.35
Ownership of cooking stove	0.288	0.45
Ownership of TV	0.463	0.5
Ownership of car/truck	0.044	0.2
Ownership of motorcycle	0.128	0.33
Computer ownership	0.042	0.2
Ratio of female people between 0 and 5 years old in HH	0.08	0.1
Ratio of male people between 0 and 5 years old in HH	0.084	0.1
Ratio of female people between 5 and 15 years old in HH	0.193	0.13
Ratio of male people between 5 and 15 years old in HH	0.206	0.14
Ratio of female people between 15 and 55 years old in HH	0.203	0.09
Ratio of male people between 15 and 55 years old in HH	0.189	0.1
Ratio of female people older than 55 years old in HH	0.022	0.04
Sample size	17,739	