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DISCUSSION PAPER SERIES

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ABSTRACT

Do Constraints on Women Worsen Child Deprivations? Framework, Measurement, and Evidence from India*

This paper provides a framework for analyzing constraints that apply specifically to women, which theory suggests may have negative impacts on child outcomes (as well as on women). We classify women's constraints into four dimensions: (i) domestic physcial and psychological abuse, (ii) low influence on household decisions, (iii) restrictions on mobility, and (iv) limited information access. Each of these constraints are in principle determined within households. We test the impact of women's constraints on child outcomes using nationally representative household Demographic and Health Survey data from India, including 53,030 mothers and 113,708 children, collected in 2015-16. Outcomes are measured as multidimensional deprivations, utilizing UNICEF's Multidimensional Overlapping Deprivation Analysis index, incorporating deficiencies in children's access to water, sanitation, housing, healthcare, nutrition, education and information. We identify causal impacts using a Lewbel specification and present an array of additional econometric strategies and robustness checks. We find that children of women who are subjected to domestic abuse, have low influence in decision making, and limited freedom of mobility are more likely to be deprived.

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1. Introduction

This paper examines impacts of household-level constraints that primarily affect women on child deprivation. We focus on mobility restrictions, low influence on family spending and other household decisions, the extent of domestic physical and emotional abuse, and limited access to information. Women who face greater constraints may be less able to care for their children.[1] In turn, if children are less well cared for, they will be potentially less healthy or less able to study, which also can have negative effects on their probability of survival and well-being.

We test our framework for the impact of women's constraints on child outcomes using nationally representative household Demographic and Health Survey (DHS) data from India, the National Family Health Survey 4 (NFHS-4), conducted in 2015/16. These data include information on 53,030 mothers, 113,708 children ages 0-17, and 32,408 children ages 0-4 who are living with their mothers.

From the Indian NFHS-4 survey questionnaire we identify a set of variables indicating the extent of each of the four primary household-level gendered constraints on adult women that we postulate can negatively affect child wellbeing: 1) domestic physical and emotional abuse; 2) family spending, contraception, and other household decision making; 3) mobility restrictions in going to health facilities, markets, and outside the village; 4) lack of information access, such as through radio and mobile phones.

We measure child deprivation multidimensionally, using the template of UNICEF's well-known Multiple Overlapping Deprivation Analysis (MODA), which allows us to quantify child wellbeing using health, living standards, education and information dimensions. Following MODA, we incorporate deficiencies in children's access to water, sanitation, housing, healthcare, nutrition, education and information.

We then investigate whether there is a causal impact of constraints on women on child deprivations. We find that children whose mothers face more constraints are more likely to be deprived. We build on the literature on women's empowerment, some of which has raised potential benefits of improving women's empowerment indicators for improving child outcomes. However, the literature shows substantial differences of opinion on the appropriate definition and scope of the concept of empowerment in comparison with other concepts such as human rights. As a result, we focus our attention on a set of observable constraints, which in turn predict specific causal effects, rather than confine the analysis to a single definition of the component dimensions of empowerment, or unnecessarily confront complex estimation challenges (including latent variable problems).

2. Conceptual framework

In many settings, women face constraints that affect them substantially more than men, largely, if not solely, because of their gender. This paper focuses on four major sets of

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[1] Some gender-based constraints may affect only or primarily men, such as mandatory military service in some countries. However, these generally apply for a relatively short period of time, and at an early stage of life, making them unlikely to affect child outcomes.

constraints: gendered mobility restrictions, low influence on family spending and other decisions, limited access to information, and living with domestic abuse. These constraints differ from each other in significant ways. For example, the presence of some of the constraints are widely understood to be violations of human (if not legal) rights, such as rights to protection from physical violence, and to freedom of mobility. Other constraints may be viewed as an imbalance of power between men and women, as in a proportionately low influence over household decisions, or lower access to information - that is, as a more traditionally defined lack of women's empowerment. Generally, these constraints affect different aspects of a woman's life; yet, all the constraints examined share in common at least three features, particularly in developing countries: they are "women-specific" in that they limit the actions and choices of women markedly more than they do for men; they can be largely determined at the household level; and they have the potential to substantially worsen the scope for reducing child deprivations.

Previous research in the literature leads us to hypothesize that each of the four types of constraint can significantly reduce women's ability to care for their children and, therefore, lower child wellbeing.

Impacts of domestic abuse. Domestic violence or abuse is, of course, one of the most pressing and serious constraints faced by women around the world. A United Nations (2018) study of femicide found that, unlike men, women are most likely to be victims of violence by intimate partners and other family members. A climate of domestic violence and other abuse, physical or psychological, can impair a mother's caretaking abilities, as she becomes less physically and emotionally capable of providing for her children. Women suffering from abuse at home may be less able to provide their children with adequate nutrition, healthcare or sanitation. Depending on the extent of injuries her medical treatment and recovery may remove her from her children, or may reduce her mobility such as for accompanying children, and her capacity for other household activities, for extended periods. Psychological harm from abuse can also be debilitating. Furthermore, children who witness spousal abuse have been found to be more likely to suffer stress, depression, and other behavioral problems (Doyle and Aizer 2018). Similarly, witnessing violence between parents can potentially increase a child's psychological stress, leading to worse general health outcomes (Ziaei, et al. 2014).[2] Children born to victims of domestic violence are significantly more likely to die before the age of five (Rawlings and Siddique, 2018). Spouse abuse is also correlated with child abuse (Appel and Holden 1998; Doyle and Aizer 2018).

Constrained influence on family spending. Women who have low influence on how to spend household income or in obtaining healthcare are potentially less able to provide adequate care for their children. Intuitively, the household division of labor that defines traditional male and female responsibilities puts much of child wellbeing in the hands of women. Improving women's bargaining power over household resources is, therefore, hypothesized to improve nutrition, health, education and sanitation outcomes of children (Kabeer, 1999). Mothers' increased influence enables them to target a larger fraction of any given amount of household resources towards improving child human capital (health, education) outcomes, therefore asserting their preference for child investment. Supporting this view, there is substantial evidence that higher shares of income or wealth controlled by women are associated with, if not causes of, improved child outcomes in many settings throughout the developing world

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[2] Moreover, victims of child abuse are more likely to grow up to abuse their own children (Oliver 1993).

(Bonilla et al 2017, De la Brière et al. 2003, Doss 2006, Imai et al 2014, Qian 2008, Schady and Rosero 2008, Yoong et al. 2012). This may be due to differences in preferences between men and women in the amount of resources devoted to children. Moreover, women may also be more effective at utilizing any family resources allocated to improve child outcomes.

Restrictions on mobility. Women who cannot go freely to the market, health facilities or beyond their village are potentially constrained from getting food, healthcare and support for their children, at least in a timely and effective manner. For instance, enhanced freedom of mobility enables a mother to get her child to a health facility more easily and rapidly than if she has to wait for a designated member of the household to escort her before leaving the home. Similarly, an unconstrained mother may find it easier to go to her child's school. When free to go to the market, mothers may purchase fresher and healthier food, making use of her knowledge of (and priority for) the child's nutritional needs, as well as a greater variety of food, leading to improved basic nutrition and broader food security. With expanded opportunity to choose economic activities and greater mobility, mothers may be able to contribute more to household income, resulting from, say, increased productivity or wage earnings.[3]

Limited access to information. Women with limited access to media and communications may be unable to acquire information on providing effective care for their children. Mass media campaigns can disseminate well-defined messages to large audiences. Wakefield et al. (2010) conduct an extensive literature review and conclude that "mass media campaigns can produce positive changes or prevent negative changes in health-related behaviors across large populations."[4] Important agricultural extension information is broadcast by radio; this is especially important for women farmers, who are much less likely to receive visits from extension agents than men (Andersen and Feder 2007). Additionally, newspaper, radio, and television media campaigns can help families adapt to climate change[5] while mobile phones provide a channel to receive information and communicate directly with others. There is experimental evidence of the impact of information on child outcomes in education, drinking water quality, and health. In particular, parents may systematically underestimate the returns to their children's education in making decisions about enrollment and hours spent studying, but respond when provided with better information.[6] Similarly, there is evidence that households respond positively to improved information about health and sanitation.[7]

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[3] We do not include employment (or lack thereof) as a constraint category because its interpretation is not clear. For instance, a woman could be forced to work even if she chooses not to, therefore, work could be interpreted as a constraint. On the other hand, if a woman chooses to work and bring more income to the household, her bargaining power within the home could improve. Consequently, we focus on influence on family spending, which directly speaks to women's constraints to access household resources.

[4] The quote is from Wakefield et al. (2010), page 1261.

[5] For an example of heat wave adaptation in Odisha, India see Das and Smith (2012)

[6] See Jensen (2012). Eighth grade boys from randomly selected schools in the Dominican Republic were provided information on returns to schooling estimated from earnings data; those receiving this information completed about 0.2-0.35 more years of schooling on average (Jensen 2010). Nguyen (2008) found provision of additional information on schooling returns resulted in a 0.2 standard deviation improvement in test scores in Madagascar.

[7] For example, in India, Jalan and Somanthan (2008) found that informing households that their drinking water is contaminated increases the probability they begin purifying their

Greater mobility, access to information, as well as a healthier, non-abusive environment for women may augment the effectiveness of human capital investment given any level of resources that may be allocated to children. In general, mothers may be more effective in augmenting the impacts of any given specific resources allocated to children, thus causing better child outcomes

If the constraints come from the household, a standard model of household bargaining results in less decision-making power of women than preferred by wives. This results even if the husband considers its potential impact on child human capital – although the resulting constraints on the mother would be less than if he did not. Conceptually, the outcome of household bargaining may be taken as the initial level for an analysis of the effect of lifting constraints for child outcomes.

Some other restrictions on women may be exogenous to the household, determined beyond the household or even neighboring areas. Important examples are gender-based credit and labor market constraints. Exogenous constraints may include unexplained average gender wage differentials, lack of protection from violence beyond the household, and the directing of government services such as agricultural extension toward male heads of household. Relaxing these constraints could require higher-scale action such as a political initiative. Economy- or society- wide constraints generally require public policy response (see United Nations, 2017). Constraints that cannot be relaxed from within households are outside the scope of our analysis.[8]

3. Data

We address the relationship between child wellbeing and women's constraints using India's DHS (NFHS-4), a large nationally representative household-level survey conducted in 2015/16. The data includes 699,686 women aged from 15-49; 269,138 children under the age of 5; and 1,014,876 children aged from 0-17. Our analysis restricts the sample to children and mothers living together in the same household, and to mothers who were included in the subsample with questions about domestic abuse, the subsample who answered a longer questionnaire, administered at state level, which includes husband background questions, among other indicators. This sample is still representative at the state level, but not at further levels of geographical disaggregation for all indicators. The survey used a two-stage sampling strategy, also covering appropriately rural areas and slums in 4 major cities (see DHS 2017). Overall, our data set includes 113,708 and 32,408 children aged 0-17 and 0-4, respectively, who are living with their mothers. Our data set also includes information on 53,030 mothers.

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water. In Bangladesh, households informed their well water contained unsafe arsenic levels generally switched to a safer well (Madajewicz et al 2007). Dupas 2007) found that provision of information in Kenya on the relative risk of HIV infection by partner age led to a substantial reduction in teenage pregnancy, and substitution away from older (riskier) partners toward same-age partners.

[8] For example, most data on women's labor market activities outside the home (including the dataset used in this paper) provide no indication of whether the work is coercive; and we leave this question for future research.

3.1 Women's Constraints

We focus on four key dimensions of women's constraints: (i) domestic abuse, (ii) low decision-making power, (iii) restricted mobility, and (iv) limited information access. We proxy for each dimension with indicators obtained from the survey questions, as summarized in Table 1.

The domestic abuse dimension includes dichotomous variables equal to one if the woman has experienced physical or emotional violence. We also include a dummy variable equal to 1 if the woman agrees that there is at least one reason to beat a wife, labeled justify violence. We interpret the literature as indicating that some women do not perceive types of physical violence as abuse; the "justify violence" variable could capture that effect.

The decision-making power dimensions focus on variables that capture the woman's input into major purchases or the allocation of household financial resources. The mobility constraint dimension focuses on variables that highlight the woman's autonomy to go to the market or outside her village. Finally, the information dimension includes indicators about how often the woman listens to the radio or reads newspapers.

Table 1: Dimensions, indicators and survey questions

Dimensions	Indicators	Variable description
Domestic abuse		
	Domestic violence	Dummy variable equal to 1 if the woman notes that she experienced any violence by partner or household member
	Emotional violence	Dummy variable equal to 1 if the woman indicates that her husband has ever said something to humiliate her in front to others, threatened to harm her, or insulted her.
	Justifies violence	Dummy variable equal to 1 if the woman believes that it is justifiable for a husband to beat a woman if she goes out, neglects the children, argues, refuses sex, cooks poorly, is unfaithful, and or is disrespectful.
Decision-making power		
	No power on earnings	Dummy variable equal to 1 if the woman has no power to decide over how her husband's earnings will be used.
	No power on woman's own healthcare	Dummy variable equal to 1 if the woman is not the main decision maker on healthcare for herself.

	No power on major purchase	Dummy variable equal to 1 if the woman has no power to make decisions about large household purchases.
	No power on contraception	Dummy variable equal to 1 if the woman has no power to make decisions about the use of contraception.
	No power on visits to relatives/friends	Dummy variable equal to 1 if the woman has no power to decide when to visit friends or family members.
Mobility		
	Not allowed to market	Dummy variable equal to 1 if the woman is not usually allowed to go to the market.
	Not allowed to health facility alone	Dummy variable equal to 1 if the woman is not usually allowed to go to health facilities alone.
	Not allowed outside village	Dummy variable equal to 1 if the woman is not usually allowed to go to outside of her village/community.
Information		
	Never reads magazine/paper	Dummy variable equal to 1 if the woman says that she never reads a newspaper or magazine.
	Never listens to radio	Dummy variable equal to 1 if the woman says that she never listens to the radio.
	Does not have cellphone	Dummy variable equal to 1 if the woman does not have any mobile phone that she can use.

Source: Indicators are generated using data from India DHS (National Family Health Survey 4 – NFHS-4).

3.2 Child wellbeing

Child wellbeing is defined using UNICEF's Multidimensional Overlapping Deprivation Analysis (MODA) (Gordon et al., 2003; de Neubourg et al. 2013). The range of deprivation goes from 0 to d, where d is the total number of dimensions defined in the specific application of the methodology. Dimensions and indicators take into account the life cycle of the child and are defined accordingly. In this study, we employ the Cross Country MODA used to comparatively assess child multidimensional deprivation over several countries (de Milliano and Plavgo, 2017), which defines seven dimensions of deprivations.

Children are deprived if they lack access to (i) water; (ii) sanitation; (iii) adequate housing; (iv) healthcare; (v) nutrition; (vi) education and/or; (vii) information. Table 2 describes how MODA is calculated in this study, highlighting each dimension, indicator and weight. The dimensions naturally vary by age to reflect that different sources of deprivation facing children change at different life stages: there are two age groups, under five, and 5 to 17 years old; the 3 household dimensions are common to both age groups, while the other two are specific to each group.

By convention, MODA aggregates indicators within each of the dimensions using a "union approach". That is, a child is counted as deprived in a given dimension if deprived in any of the indicators that composes the dimension. As child deprivations may frequently go undetected, using more than one indicator in each dimension may provide a way to avoid a Type II error.[9]

Table 2: Construction of MODA

Dimension	Age group	Deprived if:
Water	0-17	Un-improved source of drinking water (surface waters, unprotected wells or spring—WHO definition)
		Distance to water: more than 30' round trip
Sanitation	0-17	Unimproved toilet facility (no toilet, bucket, pit toilet without slab—WHO definition)
Housing	0-17	Floor and roof are both of natural/non-permanent materials
	0-17	Overcrowding: > than 4 people per room
Health	0-4	Child lives in a house where mother had un-skilled birth assistance (traditional healers, not trained midwife, friends/relatives, none)
	0-4	Not immunized in all three DPT
Nutrition	0-4	Infant and young child feeding (IYCF): child lives in a household where children under 2 are not adequately fed (according to age and breastfeeding status)
	0-4	Wasting (weight for age < -2 s.d. from WHO reference)
Education	5-17	No enrolled in primary school (children of primary age)
	5-17	Not finished primary (from age of end of primary to age 17)
Information	5-17	No access to any information or communication device

Source: adapted from de Neubourg et al., 2012. DPT = Diphtheria, Tetanus, and Pertussis; WHO = World Health Organization.

A child is defined as multidimensionally deprived if the number of her/his deprivations is greater or equal to a predefined cut-off.[10] We use cut-off points of two dimensions in our preferred specification and of one and three dimensions in robustness exercises. A measure of child wellbeing using a cut-off of two or more dimensions is most widely used in the literature (de Milliano, Plavgo, 2017).

Table 3 shows headcounts of the first three cut-offs of MODA (deprived in at least one, two, or three dimensions), by gender and location. Approximately 36 percent of children in the dataset are deprived in two or more dimensions, while 12 percent are deprived in three or more. More than two-thirds (69%) of children suffer at least one deprivation. The table also reveals a statistically significant difference between boys and girls. Approximately 37 percent of girls are deprived in two or more dimensions, compared to 35 percent of boys. The urban-rural distinction is both statistically significant, and more striking – approximately 16 percent

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[9] Of course, this approach would likely increase the corresponding Type II error.
[10] Most MODA studies produce and report results for more than one possible cut-off.

of urban children are deprived in 2 or more dimensions, compared with 43 percent of rural children deprived.

Table3: MODA by gender and location, percent of children, 2015-6.

	Total	Urban	Rural	Male	Female	P-value (Male/Female)
Deprived in 1+	68.74	47.99	76.19	67.86	69.73	0.000
Deprived in 2+	35.63	16.25	42.60	34.72	36.67	0.000
Deprived in 3+	12.04	3.81	15.01	11.67	12.46	0.000
N	113,708	30,063	83,645	60,261	53,447	

Notes: Calculations based on a sample of 113,708 children aged 0-17, India DHS 205-16. Wald test of equality of means, two-sided P-value.

4. Empirical Methods

Our analysis focuses on understanding the impact of women's constraints on child wellbeing. We estimate the following model:

$$D_{i,j} = \beta_1 C_{j,i} + \beta_2 K_{i,j} + \beta_3 M_{j,i} + \beta_4 H + \beta_5 L + \varepsilon_{i,j}, \tag{1}$$

where D represents the wellbeing of child i of mother j. The variable C is a constrained indicator of mother j of child i, as described above. The variables K and M are child and mother characteristics, respectively. Children's characteristics, K, include age and gender, while M includes the mother's level of educational attainment, age, work status and access to credit. The latter is proxied with two variables: a dummy equal to one if the woman has ever taken out a loan and a dummy equal to one if she is aware of programs that provide credit or loans. The variables H and L are household and location characteristics, respectively. Household characteristics are captured by the wealth index,[11] the husband's level of educational attainment and age, household size, and whether the household owns agricultural land. Location controls include whether the household is in a rural area and regional (state-level) fixed effects. Equation (1) is also estimated using strata clusters identified at the tehsil (taluk) level.[12] Finally, ε is an idiosyncratic error term. Descriptive statistics of the main variables used in the study are summarized in Table A1 in Appendix A.

Child deprivation, D, is equal to one if the child is deprived according to predetermined cut-offs. Our first set of results uses a standard OLS approach, which approximates the

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[11] The wealth index was created using principal component analysis. Included variables are refrigerator, motorcycle, car, phone, TV, bicycle, and land. (see de Neubourg et al., 2012).
[12] The data set contains 2,507 tehsils (taluks), which are India's main administrative geographical units.

probability of the effect of the regressors on the dependent variable. However, standard OLS regressions can be biased due to the well-known unboundedness problem – coefficient estimates may suggest that the absolute value of the change in the dependent variable is more than one. In other words, OLS estimates can give predicted probabilities below zero or above one. Therefore, we also present probit estimates, which do not have this potential problem.

In equation (1), the variables D and C are potentially endogenous because women's constraints and children's wellbeing can be jointly determined. For instance, predominant political views in the household could lower or increase women's constraints, while simultaneously determining the values that the household places on, say, children's education or health. In the absence of direct indicators of family preferences for children's wellbeing and outcomes, an estimated relationship between D and C could be spurious.

We address endogeneity using an array of econometric techniques. Our preferred specification is taken from Lewbel (2012), which proposes the use of a two-stage-least squares (2SLS) strategy that includes internally-constructed heteroskedasticity-based instruments. Lewbel shows that internal instruments can be constructed from the auxiliary equations' residuals, which are multiplied by each of the included exogenous variables in mean-centered form. The Lewbel approach also allows us to use a combination of internal and the external instrumental variable, thus providing us with three different estimation approaches: external instruments (E), internal instruments (I), and both internal and external (I+E). The external instrument is a dichotomous variable equal to one if the respondent agrees that she is justified in refusing to have sex with her husband because she is tired or not in the mood (reasons for sex). Intuitively, this variable is likely to directly explain women's constraints in the household by highlighting a prominent feature of the father and mother's relationship, but not so directly the relationship between the mother and child. Approximately 77 percent of women in the sample responded yes to this question. Furthermore, after controlling for women's constraints in the econometric analyses, the relationship between this variable and child wellbeing is insignificant. Finally, F-tests from the first stage of two-stage-least squares regressions suggest that the variable is appropriate.

Lewbel (I+E) is our preferred approach because it overidentifies the first stage equations and allows us to produce tests for the validity of instruments. For robustness, we also present standard 2SLS estimates using the external instrumental variable.

The results from the Lewbel specifications as well as the 2SLS regressions can be problematic, as mentioned above, because of the unboundedness problem. Consequently, we also fit instrumental variable probit models using the instrument. However, Dong and Lewbel (2015) explain that IV probit models with binary endogenous regressors can give inconsistent results because the maximum likelihood estimation requires a complete parametric specification of how each endogenous regressor depends on the set of instruments and on the errors. Thus, if the endogenous regressor is not a continuous variable, the first stage of IV probit model is potentially biased.[13]

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[13] Dong and Lewbel (2015) propose a model that requires both an instrumental variable and a 'special regressor'. The latter is meant to be strictly exogenous and appear additively in the model. Unfortunately, strictly exogenous regressors that satisfy both an empirical and theoretical criteria are not available.

Consequently, we take advantage of the binary nature of the endogenous variables and apply Propensity Score Matching (PSM) techniques to account for endogeneity. PSM is advantageous over other techniques, such as OLS or probit estimators, because although the procedure to calculate propensity scores is parametric, using propensity scores to compute causal effects is nonparametric. Thus, using the PSM to calculate causal effects is less susceptible to the violation of model assumptions (Li, 2013).

5. Results

5.1 Benchmark OLS Estimates

Table 4, panels A to D present the OLS results of the estimation of equation (1).[14] Appendix B Tables B1-B4 present a comparison of the OLS and probit results. Those tables reveal no significant differences in the size and sign of coefficient estimates, suggesting that the results do not suffer from an unboundedness problem. The dependent variable in Table 4 is child wellbeing, which is defined with a dummy variable equal to 1 if the child is deprived in two or more dimensions. The main variables of interest are the various women's constraint indicators. Panel A focuses on domestic abuse, Panel B focuses on decision making constraints, Panel C on mobility, and Panel D on information constraints. A positive coefficient indicates that an increase in constraints on women is conditionally associated with an increase in child deprivations. Controls include the asset index, age, husband's years of education, husband's age, household size, religion indicators, and dummy variables for rural location, the household having agricultural land, the mother not working, working in agriculture, literacy, low education, whether the mother has ever taken out a loan, and awareness of programs that provide credit or loans.

Panel A reveals that domestic physical and emotional violence, as well as the justification of violence are all positively associated with child deprivation. Similarly, Panel B shows that women who have limited or no decision power when it comes to how to spend household earnings, access healthcare, undertake major household expenditures, or visit relatives are also more likely to have multidimensionally deprived children. The coefficient estimate attached to decision making power over contraception is found to be statistically significant at the 12 percent level, which also suggests that there is a positive correlation between this constraint and child wellbeing. Panel C also shows that women who are mobility constrained are more likely to have deprived children. Finally, Panel D reveals that lack of access to information correlates negatively with child wellbeing. Children of women who never read newspapers or magazines and those of women without cell phones are more likely to be deprived in two or more dimensions.

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[14] The number of observations varies depending on the number of observations for each constraint. In particular, the decision on contraception is asked only to women who are using any kind of contraception. We decided to not restrict the sample further to include only women with all valid values for constraints and to allow for more variability. This results in different observation numbers. The full regressions including the controls are available in the online appendix.

Table 4: Women's constraints and children's deprivation (2+), OLS results

Variables	(1)	(2)	(3)	(4)	(5)
Panel A: Domestic abuse					
Physical	0.017***				
	[3.28]				
Emotional		0.029***			
		[4.20]			
At least 1 reason to beat wife			0.012***		
			[2.64]		
Other controls?	Yes	Yes	Yes		
Observations	104,415	104,398	107,132		
R-squared	0.26	0.26	0.26		
Panel B: Decision power					
Earnings	0.027**				
	[2.46]				
Healthcare		0.015***			
		[3.16]			
Purchases			0.012**		
			[2.52]		
Visits				0.015***	
				[3.14]	
Contraception					0.015+
					[1.59]
Other controls?	Yes	Yes	Yes	Yes	Yes
Observations	100,126	109,206	109,206	109,206	64,409
R-squared	0.26	0.26	0.26	0.26	0.25
Panel C: Mobility					
Market	0.013*				
	[1.72]				
Health facility		0.022**			
		[2.48]			
Outside the village			0.0050		
			[1.16]		
Other controls?	Yes	Yes	Yes		
Observations	109,224	109,224	109,224		
R-squared	0.27	0.27	0.27		
Panel D: Information					
Read newspapers	0.022***				
	[4.31]				
Listen to radio		-0.0090			
		[-1.47]			
Have cell phone			0.040***		
			[8.22]		
State FE?	Yes	Yes	Yes		
Other controls?	Yes	Yes	Yes		
Observations	109,224	109,224	109,224		
R-squared	0.27	0.27	0.28		

Notes: Robust t-statistics in brackets, ***, ** and * denote 1, 5 and 10 percent level of significance, respectively. + denotes a p-value of 0.11. All regressions are clustered at the Strata level. Other controls include a rural dummy, the asset index, a dummy equal to one if the mother has ever taken out a loan, a dummy equal to one if the mother is aware of programs that provide credit or loans, a dummy for not working, dummy for working in agriculture, a literacy dummy, low education dummy, age, husband's years of education, husband's age, household size, dummy for the household having agricultural land, a dummy variable on reasons for refusing sex, and religion indicators.

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In sum, the findings in Table 4 are indicative that women's constraints and child deprivation are strongly correlated. However, the table is unable to properly determine a causal relationship. The following section addresses this issue with a variety of methods.

5.2 Main specification

We address potential endogeneity between women's constraints and child wellbeing using several econometric techniques and robustness checks. Table 5 shows our preferred specification, which uses the methodology proposed in Lewbel (2012) with both internal and external instruments (I+E), providing the most convincing estimation of potential causal impacts. The use of I+E allows us to test for the validity of our instruments using Hansen J tests. The last row of each panel presents a p-value for a Hansen J test of the instruments, with larger values confirming the validity of the instrument set. We interpret a result as causal if the coefficient estimate attached to a variable is found to be statistically significant *and* if the regression passes the Hansen test. As with the previous table, the results are divided into four panels covering constraints related to violence (A), decision power (B), mobility (C), and information (D). The table shows the results of the coefficients estimates of the variables of interest within each in panel.

Overall, Table 5 shows evidence that women who experience emotional violence, restrictions on how to use household earnings, as well as those that cannot access health facilities on their own nor regularly read newspapers have children that are more likely to be deprived in more than two dimensions of MODA. The Hansen J p-value confirm a causal relationship between emotional violence, earnings, and access to health facilities with child deprivation with the remaining variables indicating only a positive correlation.

We also estimated Table 5 without the credit variables. We excluded these controls as a robustness check. Credit is arguably a domain of women's constraints, and most constraints are correlated. The results, available in the online appendix, are consistent with those found in Table 5; indeed the only differences are that restrictions to contraception usage and lack of access to health facilities are also found to have a causal and statistically significant relationship with child deprivation with this alternative specification.[15]

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[15] In an additional robustness test, we include the wealth index and its squared term in the Lewbel (I+E) regressions. The results suggest that child deprivation decreases with household wealth at a decreasing rate – as the index approximates its sample mean, the relationship between wealth and deprivation becomes positive. A plausible explanation for this result is that there is a tendency in India to pull women out of the labor force as soon as the family can "afford" to do so, in which case the implication (questionable as it is) could be that an income effect dominates a maternal time effect.

Table 5: Women's constraints and children's deprivation (2+), Lewbel (I+E) results

Variables	(1)	(2)	(3)	(4)	(5)
Panel A: Domestic abuse					
Physical	0.0041				
	[0.38]				
Emotional		0.044***			
		[2.96]			
At least 1 reason to beat wife			0.0086		
			[0.52]		
Other controls (inc. State FE)?	Yes	Yes	Yes		
Observations	104,415	104,398	107,132		
R-squared	0.28	0.28	0.28		
Hansen J p-value	0.18	0.37	0.027		
Panel B: Decision power					
Earnings	0.027**				
	[2.41]				
Healthcare		0.0063			
		[0.40]			
Purchases			0.019		
			[1.19]		
Visits				0.010	
				[0.71]	
Contraception					0.042+
					[1.62]
Other controls (inc. State FE)?	Yes	Yes	Yes	Yes	Yes
Observations	100,126	109,206	109,206	109,206	64,409
R-squared	0.28	0.27	0.27	0.27	0.25
Hansen J p-value	0.36	0.13	0.052	0.18	0.72
Panel C: Mobility					
Market	0.012				
	[1.10]				
Health facility		0.021*			
		[1.78]			
Outside the village			0.015		
			[0.78]		
Other controls (inc. State FE)?	Yes	Yes	Yes		
Observations	109,224	109,224	109,224		
R-squared	0.27	0.27	0.27		
Hansen J p-value	0.046	0.65	0.014		
Panel D: Information					
Read newspapers	0.045***				
	[7.33]				
Listen to radio		0.0054			
		[0.43]			
Have cell phone			0.024		
			[1.11]		
Other controls (inc. State FE)?	Yes	Yes	Yes		
Observations	109,224	109,224	109,224		

R-squared	0.27	0.27	0.28
Hansen J p-value	0.000031	0.047	0.016

Notes: Robust t-statistics in brackets, ***, ** and * denote 1, 5 and 10 percent level of significance, respectively. + denotes a p-value of 0.104. All regressions are clustered at the Strata level. Other controls include a rural dummy, the asset index, a dummy equal to one if the mother has ever taken out a loan, a dummy equal to one if the mother is aware of programs that provide credit or loans, a dummy for not working, dummy for working in agriculture, a literacy dummy, low education dummy, age, husband's years of education, husband's age, household size, dummy for the household having agricultural land, the reasons for sex dummy, and religion indicators.

5.3 Robustness Checks

As a robustness check, in Table 6 we show estimates of equation (1) using an array of instrumental variable techniques. Column 1 shows two-stage least squares estimates, column 2 presents the estimates using internally constructed instruments (Lewbel I), column 3 presents the IV-probit estimates, and column 4 shows the results of estimates using PSM with local linear regression matching methods.[16]

Overall, the IV results provide mixed evidence of a positive, causal and statistically significant relationship between women's constraints and child wellbeing. None of the indicators were found to be consistently positive and significant across every specification.

Each of the methods for which results are presented in Table 6 have important advantages and drawbacks. However, the Lewbel (I) specification and PSM are likely to be more reliable for the reasons discussed in the Methodology section. Lewbel methods overidentify the first stage equation, allowing us estimate Hansen tests for the validity of the instruments. Furthermore, the coefficient estimates attached to the variables of interest in the Lewbel (I) regressions do not suffer from the unboundedness problem, which suggests that they are reliable.[17] Similarly, as argued above, PSM estimates are less susceptible to the violation of model assumptions (Li, 2013).

Consequently, using the Lewbel (I) and PSM estimates, we can conclude that there is evidence that child wellbeing is negatively affected by constraints related to emotional violence, lack of decision power regarding the use of earnings and the use of contraception, lack of autonomous access to health facilities, and information constraints captured by reading newspapers. The Hansen p-values of the Lewbel (I) method suggest that emotional violence, restriction on the use of earnings and contraception, as well as restrictions accessing health facility cause child deprivation.

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[16] As an additional robustness exercise, we also use PSM with the following matching algorithms: one and four nearest-neighbors, radius, and Kernel. The results, available upon request, are consistent with the local linear regression results.

[17] Appendix Table B5 replicates the Lewbel (I) and (I+E) results and the corresponding Hansen-J p-values. Overall, the table suggests that the instrument sets are valid.

Table 6: Women's constraints and children's deprivation (2+), IV tests (marginal effects) and PSM

Variable/Method	(1) 2SLS	(2) Lewbel (I)	(3) IV-Probit	(4) PSM
Physical violence	0.28	0.0035	0.70	0.016**
	[1.21]	[0.33]	[0.98]	[2.34]
Emotional violence	0.37	0.043***	0.92	0.01***
	[1.19]	[2.92]	[0.95]	[4.24]
OK to beat wife	0.20*	0.0012	0.57	0.014**
	[1.70]	[0.071]	[1.53]	[2.22]
Can't decide: Earnings	0.51	0.027**	0.97	0.04**
	[0.71]	[2.41]	[0.41]	[2.58]
Can't decide: Healthcare	0.21	0.0036	0.57	0.022***
	[1.55]	[0.22]	[1.32]	[3.20]
Can't decide: Purchases	0.18	0.016	0.49	0.21***
	[1.54]	[0.98]	[1.29]	[3.11]
Can't decide: Visits	0.16	0.0072	0.43	0.22***
	[1.55]	[0.50]	[1.28]	[3.12]
Can't decide: Contraception	-0.014	0.043*	-0.057	0.025*
	[-0.099]	[1.67]	[-0.11]	[1.96]
Can't go: Market	-3.71	0.012	-3.41***	0.024**
	[-0.56]	[1.11]	[-4.98]	[2.29]
Can't go: Health facility	1.17	0.021*	2.64*	0.028**
	[1.30]	[1.76]	[1.75]	[2.25]
Can't go: Out of village	0.28	0.0099	0.75	0.01*
	[1.52]	[0.50]	[1.42]	[1.69]
Read newspapers	-1.87	0.045***	-2.49***	0.082***
	[-0.87]	[7.34]	[-3.15]	[3.73]
Listens to radio	-0.37	0.0067	-0.99	-0.018*
	[-1.48]	[0.53]	[-1.35]	[1.90]
Have cell phone	2.18	0.023	2.24***	0.034***
	[0.65]	[1.07]	[5.50]	[3.66]

Notes: Robust t-statistics in brackets, ***, ** and * denote 1, 5 and 10 percent level of significance, respectively. All regressions are clustered at the Strata level. PSM is calculated using local linear regression matching algorithms. Other controls include child gender, age, location, the wealth index, a dummy equal to one if the mother has ever taken out a loan, a dummy equal to one if the mother is aware of programs that provide credit or loans, a dummy for whether the mother is not working or if she works in agriculture, a dummy for whether the mother can read a full sentence, mother's education, agricultural land, and household size.

For additional robustness checks, Table 7 replicates the methods in Tables 2 and 5 using children deprived in at least one (1+) and three (3+) dimensions as dependent variables, respectively. The OLS and Lewbel results are summarized in the left and right panels of Table 8, respectively. Using 3+ dimensions is a stricter approach to deprivation. In our sample, approximately 12 percent of children are deprived in at least three dimensions. On the other hand, 68 percent of children are deprived in one or more dimensions.

The OLS results are consistent with those found above. We discover a positive association with child deprivation in at least one dimension with all forms of domestic abuse, as well as lack of decision power with respect to purchases and visits. The results also reveal a positive

association between deprivation in at least three dimensions and physical and emotional abuse, lack of decision power in all components, as well as mobility restrictions pertaining to leaving the village. Regarding information, we find evidence of a positive association with constraints on mobile phones, yet a negative association with reading newspapers.

As with Table 5, in Table 7 we use the Hansen tests coupled with the standard t-tests to interpret the results. The table suggests that mothers suffering from emotional violence are more likely to have children deprived in at least one and at least three dimensions, respectively. Interestingly, column 5 also shows evidence of a positive, causal and statistically significant relationship between access to healthcare and children being deprived in at least 3 dimensions. Column 5 also suggests that information restrictions are positively related with a child being deprived in at least three dimensions; however, we cannot conclude that this relationship is causal.

Table 7: Children deprived in 1+ and 3+ dimensions and women's constraints, OLS and Lewbel (I+E) results

Model:	OLS Results		Lewbel (I+E) results			
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Variable:	Dep. 1+ Estimates	Dep. 3+ Estimates	Dep. 1+ Estimates	Hansen p-value	Dep. 3+ Estimates	Hansen p-value
Physical violence	0.019***	0.0066*	-0.0055	0.055	-0.0009	0.0065
	[4.51]	[1.81]	[-0.61]		[-0.11]	
Emotional violence	0.029***	0.014***	0.023*	0.39	0.032**	0.37
	[5.11]	[2.73]	[1.90]		[2.55]	
OK to beat wife	0.015***	0.0029	0.0026	0.0053	-0.0029	0.028
	[3.85]	[0.94]	[0.15]		[-0.23]	
Can't decide: Earnings	0.012	0.035***	0.013	0.49	0.035***	0.092
	[1.41]	[3.91]	[1.54]		[3.88]	
Can't decide: Healthcare	0.0011	0.0096***	-0.0023	0.11	0.026**	0.19
	[0.25]	[2.63]	[-0.16]		[2.33]	
Can't decide: Purchases	0.0075*	0.010***	-0.024	0.16	0.018	0.025
	[1.75]	[2.87]	[-1.43]		[1.43]	
Can't decide: Visits	0.0090**	0.0072**	0.002	0.45	0.0065	0.058
	[2.12]	[2.10]	[0.15]		[0.65]	
Can't decide: Contraception	-0.00077	0.016**	0.013	0.7	0.0079	0.52
	[-0.090]	[2.42]	[0.63]		[0.40]	
Can't go: Market	0.00093	0.0061	0.0097	0.033	0.0038	0.0083
	[0.15]	[1.14]	[1.06]		[0.45]	
Can't go: Health facility	0.0035	0.0050	0.0089	0.22	-4.7E-05	0.15
	[0.48]	[0.77]	[0.92]		[-0.0052]	
Can't go: Out of village	-0.0025	0.0062**	-0.0025	0.042	0.0051	0.083
	[-0.62]	[2.05]	[-0.11]		[0.34]	
Read newspapers	0.057***	-0.0058*	0.051***	0.035	0.019***	4.90E-06
	[10.0]	[-1.92]	[7.09]		[5.55]	
Listens to radio	-0.0035	-0.0021	-0.017	0.11	0.017**	0.0019
	[-0.58]	[-0.54]	[-1.21]		[2.34]	
Have cell phone	0.046***	0.019***	-0.013	0.000072	0.036***	5.60E-06
	[10.5]	[6.58]	[-0.61]		[2.75]	

Notes: Robust t-statistics in brackets, ***, ** and * denote 1, 5 and 10 percent level of significance, respectively. All regressions are clustered at the Strata level. Other controls include a rural dummy, the asset index, a dummy equal to one if the mother has ever taken out a loan, a dummy equal to one if the mother is aware of programs that provide credit or loans, a dummy for not working, dummy for working in agriculture, a literacy dummy, low education dummy, age, husband's years of education, husband's age, household size, dummy

for the household having agricultural land, the reasons for sex dummy, and religion indicators.

The regressions above do not include caste controls because of data availability. The survey asked respondents if they belong to scheduled caste, scheduled tribe, or other backwards caste. Unfortunately, there were many missing observations leading us to lose approximately 5,000 to 10,000 observations in the baseline regressions. As a result, we only include dummy variables if a woman belongs to a scheduled caste, scheduled tribe, or other backwards caste in robustness exercises. These results are summarized in Table 8, where the OLS results and Lewbel (I+E) results are summarized in the left and right panels, respectively. The table shows results using children deprived in 1+, 2+ and 3+ dimensions of MODA as dependent variables, respectively.

The OLS reveal a positive association between all definitions of child deprivation and women who suffer from emotional violence, restrictions on household purchases and visits, as well as not regularly using mobile phones. We also find a positive association between children being deprived in at least one dimension and their mothers suffering from all types of domestic abuse, facing restriction on the use of household earnings for purchases, facing restrictions on making visits, and being information constrained with regards to access to newspapers and mobile services. There is also a positive association between children deprived in at least three dimension and emotional violence, all the decision constraints, leaving the village and access to mobile phones. The results using deprivation in at least two dimensions are entirely consistent with those found above.

As before, the Lewbel results are interpreted as valid when they pass both Hansen J tests standard t-tests. Column 5 shows that the results using child deprivation in two or more dimensions as the dependent variable are very much robust to the inclusion of caste controls. Women who experience emotional violence, restrictions on how to use household earnings, as well as those that cannot access health facilities on their own have children that are more likely to be deprived in more than two dimensions of MODA.

Column 6 also suggest that mothers suffering from emotional violence are more likely to have children deprived in at least three dimensions. Additionally, there is evidence of a positive and statistically significant relationship between access to healthcare and earnings with children being deprived in at least three dimensions. We further uncover evidence suggesting that information restrictions are positively associated with a child being deprived in at least three dimensions. However, unlike Table 7, the Hansen J statistics do not accept the null hypothesis that the instrument set is valid instrument; thus, we cannot statistically confirm that these relationships are causal when including caste controls. Similarly, column 4 cannot confirm a statistically significant relationship between women's constraints and children being deprived in at least one dimension.

Table 8: Children deprived in 1+, 2+, and 3+ dimensions and women's constraints including caste controls, OLS and Lewbel (I+E) results

Model:	OLS Results			Lewbel (I+E) results		
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Variable:	Dep. 1+	Dep. 2+	Dep. 3+	Dep. 1+	Dep. 2+	Dep. 3+
Physical violence	0.016***	0.013**	0.0035	-0.0031⚌	0.00049⚌	-0.0025
	[3.88]	[2.47]	[0.94]	[-0.34]	[0.045]	[-0.30]
Emotional violence	0.028***	0.026***	0.012**	0.016⚌	0.039***,⚌	0.030**

	[4.87]	[3.68]	[2.29]	[1.35]	[2.68]	[2.39]
OK to beat wife	0.018***	0.014***	0.0038	0.01	0.018	0.0028
	[4.54]	[3.24]	[1.22]	[0.59]	[1.14]	[0.23]
Can't decide: Earnings	0.0091	0.023**	0.032***	0.01‡	0.023**,‡	0.032***
	[1.05]	[2.12]	[3.60]	[1.17]	[2.07]	[3.64]
Can't decide: Healthcare	0.00092	0.015***	0.0094**	-0.0061‡	0.0029‡	0.025**,‡
	[0.21]	[3.14]	[2.55]	[-0.41]	[0.18]	[2.32]
Can't decide: Purchases	0.0093**	0.013***	0.0096***	-0.02‡	0.015‡	0.016
	[2.19]	[2.64]	[2.65]	[-1.18]	[0.91]	[1.34]
Can't decide: Visits	0.0100**	0.016***	0.0069**	0.0054‡	0.01‡	0.0049
	[2.34]	[3.29]	[1.96]	[0.40]	[0.68]	[0.47]
Can't decide: Contraception	0.00031	0.016+	0.015**	0.014‡	0.048*,‡	0.0089‡
	[0.037]	[1.64]	[2.21]	[0.67]	[1.83]	[0.43]
Can't go: Market	0.0051	0.018**	0.0087	0.0073	0.015‡	0.0081‡
	[0.81]	[2.47]	[1.62]	[0.81]	[1.34]	[0.98]
Can't go: Health facility	0.0039	0.025***	0.0056	0.011‡	0.027**,‡	0.0042
	[0.53]	[2.79]	[0.86]	[1.16]	[2.17]	[0.45]
Can't go: Out of village	-0.0035	0.005	0.0059*	0.0087	0.029‡	0.012
	[-0.88]	[1.14]	[1.91]	[0.37]	[1.41]	[0.84]
Read newspapers	0.057***	0.024***	-0.0054*	0.051***	0.048***	0.021***
	[9.87]	[4.58]	[-1.74]	[6.92]	[7.55]	[5.96]
Listens to radio	-0.0069	-0.01	-0.002	-0.035**,‡	-0.0014‡	0.017**
	[-1.13]	[-1.62]	[-0.50]	[-2.39]	[-0.11]	[2.07]
Have cell phone	0.046***	0.039***	0.018***	-0.0049	0.0081	0.025**
	[10.6]	[7.91]	[6.06]	[-0.26]	[0.40]	[1.96]

Notes: Robust t-statistics in brackets, ***, ** and * denote 1, 5 and 10 percent level of significance, respectively. All regressions are clustered at the Strata level. ‡ denotes a Hansen p-value greater than 0.10. Other controls include a rural dummy, the asset index, a dummy equal to one if the mother has ever taken out a loan, a dummy equal to one if the mother is aware of programs that provide credit or loans, a dummy for not working, dummy for working in agriculture, a literacy dummy, low education dummy, age, husband's years of education, husband's age, household size, dummy for the household having agricultural land, the reasons for sex dummy, dummy variable if the woman belongs to a scheduled caste, scheduled tribe, or other backwards caste.

Our final robustness test, available upon request, focuses on the possibility that the results are driven by multiple children from a few households. That is, it is plausible that a few constrained mothers with many children are driving the results. We estimated Lewbel (I+E) regressions using only information from one child from each household and find consistent results. Mothers constrained by emotional violence, restrictions on the use of household earnings, and lack of information from newspapers are more likely to have children that are MODA deprived in at least two dimensions.

6. Concluding Remarks

This paper presents evidence that constraints on women are significantly associated with child deprivations. Our econometric analysis uncovers a causal and statistically significant relationship between women experiencing constraints (emotional abuse, restrictions on the use of household earnings, as well as access to health facilities) and child deprivation. We measure child deprivation using indicators of access to adequate water, sanitation, housing,

healthcare, nutrition, education, and information. Our more general conclusion is that societal changes that relax constraints on women have potential complementary benefits for their children.

Consequently, it is important that analyses showing welfare gains of relaxing constraints on women – often referred to as women's empowerment – account for potential additional intra-household benefits and examine the channels through which they operate. In addition to the intrinsic value of this additional benefit, it may also represent a secondary cause of the observed impacts on child wellbeing. For example, part of the observed impact of a poverty program on child outcomes may result indirectly from the lower constraints on women caused by the program. Our results point to the importance of including measures of the impacts on women's constraints in all evaluations of programs to reduce poverty and otherwise aid children.

Finally, we note that there may be localized "network effects," or complementarities, in relaxing constraints; there may be local equilibria in achieving empowerment (and realizing its benefits), in which case it may be easier for a woman to reduce constraints when a larger fraction of women in their local area are free of the same constraints. This, too, we leave for future research.

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Appendix A: Descriptive Statistics

Table A1: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Child is deprived in					
2+ dimensions	104,415	0.36	0.48	0	1
1+ dimensions	104,415	0.69	0.46	0	1
3+ dimensions	104,415	0.12	0.32	0	1
Constraints					
Physical violence	104,415	0.27	0.44	0	1
Emotional violence	104,398	0.11	0.32	0	1
At least 1 reason to beat wife	102,525	0.43	0.50	0	1
Can't decide: Earnings	95,673	0.77	0.42	0	1
Can't decide: Healthcare	104,398	0.23	0.42	0	1
Can't decide: Purchases	104,398	0.25	0.43	0	1
Can't decide: Visits	104,398	0.24	0.43	0	1
Can't decide: Contraception	62,186	0.08	0.28	0	1
Can't go: Market	104,415	0.09	0.28	0	1
Can't go: Health facility	104,415	0.06	0.23	0	1
Can't go: Out of village	104,415	0.49	0.50	0	1
Doesn't' read newspapers	104,415	0.71	0.45	0	1
Doesn't listen to radio	104,415	0.86	0.35	0	1
Doesn't have a cell phone	104,415	0.54	0.50	0	1
Controls					
Child is male	104,415	0.53	0.50	0	1
Age of the child (years)	104,415	7.86	4.80	0	17
Rural	104,415	0.74	0.44	0	1
Wealth Index	104,415	-0.04	1.44	-3.75	6.82
Aware of credit	104,415	0.67	0.47	0	1
Taken a loan	104,415	0.36	0.48	0	1
Woman is not working	104,415	0.07	0.25	0	1
Works in agriculture	104,415	0.19	0.39	0	1
Can read full sentence	104,415	0.49	0.50	0	1
Mother has low education	104,415	0.54	0.50	0	1
Mother's age	104,415	32.60	6.41	15	49
Father's years of education	104,415	7.00	4.92	0	20
Father's age	104,415	37.33	7.55	15	95
Household size	104,415	5.68	1.97	2	38
Has agricultural land	104,415	0.45	0.50	0	1

Appendix B –

Table B1: Violence constraints and children's deprivation (2+), OLS and Probit (marginal effects)

VARIABLES/MODEL	(1) OLS	(2) Probit	(3) OLS	(4) Probit	(5) OLS	(6) Probit
Violence type:						
Physical	0.017***	0.018***				
	[3.28]	[3.12]				
Emotional			0.029***	0.034***		
			[4.20]	[4.52]		
At least 1 reason to beat wife					0.012***	0.018***
					[2.64]	[3.40]
Child is male	-0.0033	-0.0037	-0.0032	-0.0035	-0.0022	-0.0024
	[-1.31]	[-1.19]	[-1.26]	[-1.14]	[-0.88]	[-0.79]
Age of the child (years)	-0.017***	-0.020***	-0.017***	-0.020***	-0.018***	-0.021***
	[-40.2]	[-37.5]	[-40.2]	[-37.5]	[-40.6]	[-37.9]
Rural	0.21***	0.28***	0.21***	0.28***	0.21***	0.29***
	[29.8]	[30.7]	[29.8]	[30.8]	[30.0]	[31.0]
Wealth index	-0.087***	-0.12***	-0.087***	-0.12***	-0.086***	-0.12***
	[-43.8]	[-45.3]	[-43.8]	[-45.2]	[-44.3]	[-45.8]
Aware of credit	-0.036***	-0.043***	-0.036***	-0.043***	-0.036***	-0.044***
	[-7.31]	[-7.03]	[-7.32]	[-7.04]	[-7.46]	[-7.18]
Taken a loan	-0.016*	-0.0057	-0.016*	-0.0058	-0.016*	-0.0066
	[-1.83]	[-0.51]	[-1.83]	[-0.53]	[-1.90]	[-0.60]
Woman is not working	-0.025***	-0.027***	-0.025***	-0.027***	-0.026***	-0.028***
	[-4.40]	[-3.54]	[-4.36]	[-3.48]	[-4.54]	[-3.62]
Works in agriculture	0.019**	0.015	0.019**	0.015*	0.017**	0.013
	[2.38]	[1.63]	[2.40]	[1.66]	[2.16]	[1.42]
Can read full sentence	-0.068***	-0.057***	-0.068***	-0.057***	-0.068***	-0.057***
	[-5.48]	[-4.04]	[-5.48]	[-4.02]	[-5.58]	[-4.17]
Mother has low education	0.015	0.035**	0.015	0.035**	0.015	0.034**
	[1.26]	[2.51]	[1.28]	[2.53]	[1.23]	[2.45]
Mother's age	0.00052	-0.0010	0.00052	-0.0010	0.00060	-0.00096
	[0.85]	[-1.35]	[0.85]	[-1.35]	[0.99]	[-1.27]
Father's years of education	-0.0090***	-0.011***	-0.0090***	-0.011***	-0.0090***	-0.011***
	[-16.4]	[-17.2]	[-16.4]	[-17.2]	[-16.6]	[-17.4]
Father's age	-0.00067	-0.00085	-0.00070	-0.00087	-0.00084*	-0.0010*
	[-1.36]	[-1.41]	[-1.41]	[-1.45]	[-1.70]	[-1.70]
Household size	0.022***	0.029***	0.022***	0.029***	0.022***	0.029***
	[19.9]	[21.7]	[19.9]	[21.7]	[20.2]	[22.0]
Has agricultural land	0.0060	0.011*	0.0061	0.011*	0.0045	0.0091
	[1.22]	[1.91]	[1.23]	[1.92]	[0.91]	[1.58]
State FE?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	104,415	104,415	104,398	104,398	107,132	107,132
R-squared	0.28		0.28		0.28	
Pseudo R-squared		0.26		0.26		0.26
Chi-squared p-value		0		0		0

Notes: Robust t-statistics in brackets, ***, ** and * denote 1, 5 and 10 percent level of significance, respectively. All regressions are clustered at the Strata level.

Table B2: Decision constraints and children's deprivation (2+), OLS and Probit (marginal effects)

VARIABLES/MODEL	(1) OLS	(2) Probit	(3) OLS	(4) Probit	(5) OLS	(6) Probit	(7) OLS	(8) Probit	(9) OLS	(10) Probit
No decision power in:										
Earnings	0.027**	0.026**								
	[2.46]	[2.10]								
Healthcare			0.015***	0.019***						
			[3.16]	[3.39]						
Purchases					0.012**	0.016***				
					[2.52]	[2.96]				
Visits							0.015***	0.019***		
							[3.14]	[3.38]		
Contraception									0.015	0.017*
									[1.59]	[1.70]
Child is male	-0.0028	-0.0032	-0.0026	-0.0029	-0.0026	-0.0028	-0.0025	-0.0028	-0.0033	-0.0038
	[-1.11]	[-1.03]	[-1.06]	[-0.96]	[-1.05]	[-0.94]	[-1.04]	[-0.93]	[-1.06]	[-1.05]
Age of the child (years)	-0.017***	-0.020***	-0.017***	-0.020***	-0.017***	-0.020***	-0.017***	-0.020***	-0.015***	-0.016***
	[-39.0]	[-36.5]	[-40.6]	[-38.0]	[-40.6]	[-37.9]	[-40.6]	[-38.0]	[-26.7]	[-24.6]
Rural	0.21***	0.28***	0.21***	0.28***	0.21***	0.28***	0.21***	0.28***	0.19***	0.25***
	[29.9]	[30.9]	[30.2]	[31.1]	[30.1]	[31.1]	[30.2]	[31.1]	[24.9]	[25.9]
Wealth Index	-0.085***	-0.12***	-0.087***	-0.12***	-0.087***	-0.12***	-0.087***	-0.12***	-0.086***	-0.12***
	[-42.9]	[-44.7]	[-44.5]	[-46.0]	[-44.6]	[-46.0]	[-44.5]	[-46.0]	[-36.3]	[-37.1]
Aware of credit	-0.037***	-0.045***	-0.035***	-0.042***	-0.035***	-0.042***	-0.035***	-0.042***	-0.028***	-0.032***
	[-7.39]	[-7.17]	[-7.30]	[-7.00]	[-7.33]	[-7.02]	[-7.32]	[-7.02]	[-4.74]	[-4.65]
Taken a loan	-0.015*	-0.0043	-0.015*	-0.0056	-0.015*	-0.0055	-0.015*	-0.0057	-0.032***	-0.023*
	[-1.72]	[-0.39]	[-1.82]	[-0.51]	[-1.81]	[-0.50]	[-1.82]	[-0.52]	[-3.16]	[-1.84]
Woman is not working	-0.053***	-0.054***	-0.027***	-0.029***	-0.027***	-0.029***	-0.027***	-0.029***	-0.036***	-0.036***
	[-4.74]	[-4.18]	[-4.77]	[-3.88]	[-4.72]	[-3.86]	[-4.73]	[-3.86]	[-5.02]	[-4.14]
Works in agriculture	0.022**	0.013	0.018**	0.014	0.018**	0.014	0.018**	0.014	0.026***	0.017*
	[2.42]	[1.29]	[2.32]	[1.58]	[2.30]	[1.56]	[2.29]	[1.55]	[2.66]	[1.69]
Can read full sentence	-0.078***	-0.068***	-0.071***	-0.060***	-0.071***	-0.060***	-0.071***	-0.060***	-0.063***	-0.047***
	[-6.17]	[-4.75]	[-5.78]	[-4.35]	[-5.80]	[-4.36]	[-5.80]	[-4.37]	[-4.20]	[-2.95]
Mother has low education	0.0086	0.026*	0.013	0.032**	0.013	0.032**	0.013	0.032**	0.019	0.040**
	[0.70]	[1.83]	[1.14]	[2.37]	[1.13]	[2.36]	[1.12]	[2.34]	[1.32]	[2.52]
Mother's age	0.00085	-0.00056	0.00036	-0.0012	0.00036	-0.0012	0.00037	-0.0011	0.00044	-0.0014
	[1.38]	[-0.74]	[0.61]	[-1.60]	[0.61]	[-1.60]	[0.64]	[-1.58]	[0.54]	[-1.42]
Father's years of education	-0.0090***	-0.011***	-0.0091***	-0.011***	-0.0091***	-0.011***	-0.0091***	-0.011***	-0.0074***	-0.0090***
	[-16.1]	[-16.8]	[-16.7]	[-17.5]	[-16.7]	[-17.5]	[-16.7]	[-17.5]	[-10.5]	[-11.5]
Father's age	-0.0011**	-0.0014**	-0.00069	-0.00090	-0.00068	-0.00090	-0.00068	-0.00090	-0.00064	-0.00074
	[-2.30]	[-2.44]	[-1.45]	[-1.55]	[-1.44]	[-1.55]	[-1.44]	[-1.55]	[-0.97]	[-0.96]
Household size	0.022***	0.029***	0.022***	0.029***	0.022***	0.029***	0.022***	0.029***	0.021***	0.026***
	[19.2]	[20.9]	[20.0]	[21.8]	[19.9]	[21.7]	[20.0]	[21.7]	[14.2]	[15.6]
Has agricultural land	0.0050	0.0087	0.0036	0.0080	0.0036	0.0080	0.0035	0.0080	0.0018	0.0044
	[0.99]	[1.49]	[0.73]	[1.41]	[0.73]	[1.40]	[0.72]	[1.40]	[0.30]	[0.66]
State FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	100,126	100,126	109,206	109,206	109,206	109,206	109,206	109,206	64,409	64,409
R-squared	0.28		0.27		0.27		0.27		0.25	
Pseudo R-squared		0.26		0.26		0.26		0.26		0.25
Chi-squared p-value		0		0		0		0		0

Notes: Robust t-statistics in brackets, ***, ** and * denote 1, 5 and 10 percent level of significance, respectively. All regressions are clustered at the Strata level.

Table B3: Mobility constraints and children's deprivation (2+), OLS and Probit (marginal effects)

VARIABLES/MODEL	(1) OLS	(2) Probit	(3) OLS	(4) Probit	(5) OLS	(6) Probit
Not allowed to go to:						
Market	0.013*	0.012				
	[1.72]	[1.42]				
Health facility			0.022**	0.023**		
			[2.48]	[2.31]		
Outside the village					0.0050	0.0089*
					[1.16]	[1.71]
Child is male	-0.0026	-0.0029	-0.0026	-0.0029	-0.0026	-0.0029
	[-1.07]	[-0.97]	[-1.07]	[-0.97]	[-1.07]	[-0.98]
Age of the child (years)	-0.017***	-0.020***	-0.017***	-0.020***	-0.017***	-0.020***
	[-40.6]	[-38.0]	[-40.6]	[-38.1]	[-40.6]	[-38.0]
Rural	0.21***	0.28***	0.21***	0.28***	0.21***	0.28***
	[30.2]	[31.1]	[30.2]	[31.1]	[30.2]	[31.1]
Wealth Index	-0.087***	-0.12***	-0.087***	-0.12***	-0.087***	-0.12***
	[-44.6]	[-46.1]	[-44.6]	[-46.1]	[-44.6]	[-46.1]
Aware of credit	-0.027***	-0.029***	-0.027***	-0.029***	-0.027***	-0.029***
	[-4.67]	[-3.78]	[-4.68]	[-3.79]	[-4.70]	[-3.87]
Taken a loan	-0.036***	-0.043***	-0.035***	-0.043***	-0.035***	-0.043***
	[-7.45]	[-7.15]	[-7.42]	[-7.11]	[-7.44]	[-7.10]
Woman is not working	-0.015*	-0.0056	-0.015*	-0.0057	-0.015*	-0.0054
	[-1.79]	[-0.51]	[-1.80]	[-0.52]	[-1.78]	[-0.49]
Works in agriculture	0.018**	0.014	0.018**	0.014	0.018**	0.014
	[2.33]	[1.61]	[2.33]	[1.60]	[2.32]	[1.57]
Can read full sentence	-0.071***	-0.061***	-0.071***	-0.060***	-0.071***	-0.060***
	[-5.81]	[-4.38]	[-5.80]	[-4.38]	[-5.81]	[-4.37]
Mother has low education	0.014	0.032**	0.014	0.032**	0.013	0.032**
	[1.15]	[2.37]	[1.15]	[2.37]	[1.14]	[2.37]
Mother's age	0.00035	-0.0012	0.00036	-0.0012	0.00035	-0.0012
	[0.59]	[-1.63]	[0.61]	[-1.61]	[0.60]	[-1.59]
Father's years of education	-0.0091***	-0.011***	-0.0091***	-0.011***	-0.0091***	-0.011***
	[-16.7]	[-17.5]	[-16.7]	[-17.5]	[-16.7]	[-17.5]
Father's age	-0.00068	-0.00089	-0.00069	-0.00090	-0.00067	-0.00088
	[-1.44]	[-1.55]	[-1.46]	[-1.57]	[-1.41]	[-1.52]
Household size	0.022***	0.029***	0.022***	0.029***	0.022***	0.029***
	[20.2]	[22.0]	[20.2]	[22.0]	[20.2]	[22.0]
Has agricultural land	0.0037	0.0082	0.0037	0.0082	0.0038	0.0082
	[0.76]	[1.45]	[0.75]	[1.44]	[0.77]	[1.45]
State FE?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	109,224	109,224	109,224	109,224	109,224	109,224
R-squared	0.27		0.27		0.27	
Pseudo R-squared		0.26		0.26		0.26
Chi-squared p-value		0		0		0

Notes: Robust t-statistics in brackets, ***, ** and * denote 1, 5 and 10 percent level of significance, respectively. All regressions are clustered at the Strata level.

Table B4: Information constraints and children's deprivation (2+), OLS and Probit (marginal effects)

VARIABLES/MODEL	(1) OLS	(2) Probit	(3) OLS	(4) Probit	(5) OLS	(6) Probit
Mother does not						
Read newspapers	0.022***	0.055***				
	[4.31]	[7.92]				
Listen to radio			-0.0090	-0.012		
			[-1.47]	[-1.57]		
Have cell phone					0.040***	0.049***
					[8.22]	[8.76]
Child is male	-0.0026	-0.0029	-0.0026	-0.0029	-0.0029	-0.0033
	[-1.05]	[-0.95]	[-1.06]	[-0.96]	[-1.20]	[-1.08]
Age of the child (years)	-0.017***	-0.021***	-0.017***	-0.020***	-0.017***	-0.021***
	[-40.7]	[-38.1]	[-40.7]	[-38.1]	[-40.8]	[-38.2]
Rural	0.20***	0.28***	0.21***	0.28***	0.20***	0.28***
	[29.7]	[30.6]	[30.2]	[31.1]	[29.0]	[30.2]
Wealth Index	-0.086***	-0.12***	-0.087***	-0.12***	-0.084***	-0.12***
	[-43.9]	[-45.2]	[-44.6]	[-46.1]	[-42.7]	[-44.4]
Aware of credit	-0.035***	-0.042***	-0.036***	-0.043***	-0.034***	-0.041***
	[-7.38]	[-6.98]	[-7.50]	[-7.21]	[-7.04]	[-6.74]
Taken a loan	-0.015*	-0.0046	-0.015*	-0.0058	-0.014	-0.0036
	[-1.77]	[-0.42]	[-1.81]	[-0.53]	[-1.64]	[-0.33]
Woman is not working	-0.027***	-0.031***	-0.026***	-0.028***	-0.029***	-0.031***
	[-4.79]	[-4.03]	[-4.58]	[-3.70]	[-5.01]	[-4.10]
Works in agriculture	0.017**	0.012	0.019**	0.015*	0.015*	0.0099
	[2.20]	[1.30]	[2.37]	[1.65]	[1.85]	[1.10]
Can read full sentence	-0.065***	-0.045***	-0.071***	-0.061***	-0.068***	-0.056***
	[-5.28]	[-3.24]	[-5.84]	[-4.41]	[-5.54]	[-4.09]
Mother has low education	0.011	0.027**	0.014	0.032**	0.0098	0.028**
	[0.93]	[2.01]	[1.15]	[2.38]	[0.82]	[2.07]
Mother's age	0.00038	-0.0011	0.00030	-0.0012*	0.00019	-0.0014*
	[0.65]	[-1.54]	[0.52]	[-1.71]	[0.33]	[-1.92]
Father's years of education	-0.0088***	-0.011***	-0.0091***	-0.011***	-0.0087***	-0.011***
	[-16.2]	[-16.8]	[-16.7]	[-17.5]	[-15.9]	[-16.8]
Father's age	-0.00065	-0.00084	-0.00067	-0.00087	-0.00061	-0.00080
	[-1.38]	[-1.46]	[-1.41]	[-1.51]	[-1.29]	[-1.39]
Household size	0.022***	0.029***	0.022***	0.029***	0.021***	0.028***
	[20.2]	[22.0]	[20.3]	[22.1]	[19.5]	[21.3]
Has agricultural land	0.0033	0.0072	0.0040	0.0085	0.0028	0.0072
	[0.68]	[1.26]	[0.81]	[1.49]	[0.58]	[1.27]
State FE?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	109,224	109,224	109,224	109,224	109,224	109,224
R-squared	0.27		0.27		0.28	
Pseudo R-squared		0.26		0.26		0.26
Chi-squared p-value		0		0		0

Notes: Robust t-statistics in brackets, ***, ** and * denote 1, 5 and 10 percent level of significance, respectively. All regressions are clustered at the Strata level.

Table B5: Lewbel (I+E) summary of results with Hansen tests

	Lewbel (I+E)			Lewbel (I)		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Estimates	t-stat	Hansen J p-value	Estimates	t-stat	Hansen J p-value
Physical violence	0.0041	[0.38]	0.18	0.0035	[0.33]	0.18
Emotional violence	0.044***	[2.96]	0.37	0.043***	[2.92]	0.38
OK to beat wife	0.0086	[0.52]	0.027	0.0012	[0.071]	0.046
Can't decide: Earnings	0.027**	[2.41]	0.36	0.027**	[2.41]	0.34
Can't decide: Healthcare	0.0063	[0.40]	0.13	0.0036	[0.22]	0.13
Can't decide: Purchases	0.019	[1.19]	0.052	0.016	[0.98]	0.053
Can't decide: Visits	0.010	[0.71]	0.18	0.0072	[0.50]	0.18
Can't decide: Contraception	0.042	[1.62]	0.72	0.043*	[1.67]	0.69
Can't go: Market	0.012	[1.10]	0.046	0.012	[1.11]	0.062
Can't go: Health facility	0.021*	[1.78]	0.65	0.021*	[1.76]	0.74
Can't go: Out of village	0.015	[0.78]	0.014	0.0099	[0.50]	0.018
Read newspapers	0.045***	[7.33]	0.000031	0.045***	[7.34]	0.000039
Listens to radio	0.0054	[0.43]	0.047	0.0067	[0.53]	0.057
Have cell phone	0.024	[1.11]	0.016	0.023	[1.07]	0.018

Notes: t-statistics in brackets, ***, ** and * denote 1, 5 and 10 percent level of significance, respectively. All regressions are clustered at the Strata level. Other controls include child gender, age, location, the wealth index, a dummy equal to one if the mother has ever taken out a loan, a dummy equal to one if the mother is aware of programs that provide credit or loans, a dummy for whether the mother is not working or if she works in agriculture, a dummy for whether the mother can read a full sentence, mother's education, agricultural land, and household size.