

Mookerjee, Mehreen; Ojha, Manini

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Power Through Autonomy: How Women Gain Voice in Household Decisions

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Title: Power Through Autonomy: How Women Gain Voice in Household Decisions

Mehreen Mookerjee* and Manini Ojha†

Abstract

We examine the effect of women's control over resources on their relative decision-making power within households, using an Instrumental Variable approach. We construct a composite Resource Empowerment Index that captures women's access to and control over economic and informational resources, including money, bank accounts, mobile phones, and knowledge of financial tools. To identify causal effects, we exploit variation in neighbouring women's media exposure as a source of exogenous influence on an individual woman's REI. We find robust positive effects of greater resource empowerment on women's relative say in household decisions, with evidence of diminishing marginal returns at higher levels of autonomy. We also find significant heterogeneity with large effects for older women, unemployed women, women in rural areas, those in larger households, those with less educated husbands and those with no children or more daughters.

Keywords: Resource empowerment, ownership, relative decision-making, media exposure, instrumental variable, India.

JEL Classification: J12; J13; D13

Ordering of Authors: The names of the authors have been listed in alphabetical order of surname. Both authors have contributed equally and significantly to this manuscript.

* Zayed University; GLO Fellow. Email: mehreen.mookerjee@zu.ac.ae

† Corresponding Author. Jindal School of Government and Public Policy, O. P. Jindal Global University; GLO Fellow; CDES Non Resident Fellow. Email: mojha@jgu.edu.in

1. Introduction

What determines an individual's bargaining power has been a question of considerable interest for several decades. Recent theoretical evidence refutes Becker, 1974's unitary model of households assuming common preferences in favour of models where intra-household bargaining takes place (Bobonis, 2009; Browning & Chiappori, 1998; Chiappori, 1992; Chiappori & others, 1988; Lundberg & Pollak, 1996; Manser & Brown, 1980; McElroy & Horney, 1981; Zingwe et al., 2023). In general, the literature states that final decisions in households are made on the basis of preferences of individuals and the amount of power an individual yields within the household. As such, important decisions concerning labour supply, children, expenditures and savings are typically taken by the adult male members in largely patriarchal setups. However, literature also presents the view that women can be empowered by strengthening their threat options - resources controlled by them and opportunities outside the household (Lundberg & Pollak, 1996; Manser & Brown, 1980; McElroy & Horney, 1981). Despite ample research on the issue, the exact dynamics between women's autonomy, empowerment and position in the marriage remain ambiguous (Anderson & Baland, 2002; Basu, 2006; Dyson & Moore, 1983; Kanbur & Haddad, 1994; Quisumbing & Maluccio, 2003; Rammohan & Johar, 2009; Safilios-Rothschild, 1990; Tan, 2021, Dempsey, 2000). Although autonomy may imply independence for women, true empowerment to exercise any influence may only be achieved through the interdependence of men and women in the household (Govindasamy & Malhotra, 1996; Sinha et al., 2012). Therefore, disentangling the complex connection between female autonomy and relative decision-making position in the household is of notable value to understanding existing societal structures. To this end, we attempt to examine women's autonomy measured by access and ownership of resources and investigate if it does, in fact, imply a greater say in intra-household decisions and not simply serve as an ability to act independently.

It is often difficult to arrive at a universally accepted definition of female autonomy owing to its multi-dimensional nature (Jayachandran & Voena, 2025). Although some papers consider

married women's autonomy as their educational attainment, employment status, and age differences with their spouses (Dharmalingam & Philip Morgan, 1996; Dyson & Moore, 1983; Heaton et al., 2005, Amarante et al. 2023), others define it as the degree of women's access to and control over material and social resources (Dixon, 1978; Jejeebhoy & Sathar, 2001), while some consider bodily autonomy, control over sexuality and safe sex as indicators of empowerment (Ojha & Babbar, 2024). Furthermore, Kabeer (1999) and Anderson & Eswaran, (2009) refer to autonomy as the process of acquiring the ability to make strategic life choices or household decisions, whereas Mason & Smith, (2000) use the terms autonomy, empowerment, and gender stratification interchangeably. Notwithstanding these diverse perspectives, a common consensus is that women derive some form of agency from having greater mobility, influence in child-related decisions and control over resources (Agarwal, 1997; Kabeer, 1999a; Mabsout & Van Staveren, 2010; Panda & Agarwal, 2005a; Quisumbing & Maluccio, 2003a). Following Rammohan & Johar, (2009), who differentiate between women's personal, physical, and economic autonomy, we focus on women's access to and ownership of resources in this paper. We then estimate the causal effect of such agency on women's relative say in intra-household decision-making.

Utilizing the Couple's data from the fourth wave of the National Family Health Survey of India, we create a measure of women's autonomy, namely, the ***Resource Empowerment Index (REI)***, using specific information on the *physical and financial resources they have access to, have complete control over, and singularly own*. The fundamental econometric challenge with such a measure is the difficulty in establishing a causality between these economic proxies and intra-household decisions (Rammohan & Johar, 2009). Greater autonomy may increase a woman's relative say in intra-household decisions; however, the direction of causality may also run in the other direction. Women who already have more say in household matters may be more likely to gain or maintain control over resources. To alleviate the concerns of reverse causality and endogeneity found in other papers, we employ an Instrumental Variable (IV) approach and estimate the causal impact of a woman's REI on her relative decision-making power. We delve further into the individual

components of our measure as well as the various intra-household decisions to ascertain the exact nature of the relationship. First, we quantify the effect of a woman's REI on each component of intra-household decisions. Second, we identify the effects of each component of REI on the household decisions. This exercise provides some useful insights into the channels through which women derive maximum empowerment and which household decisions they are most involved in.

The results are interesting and ought to serve as a guide for targeted policy discussions. We find robust evidence that greater REI results in her having a greater relative say in intra-household decisions. A one standard deviation (SD) increase in the woman's REI leads to about a 0.47 standard deviation (SD) increase in her intra-household decision-making power. In order to estimate our desired causal effect for each household, we define its neighbourhood to include all other households within the same survey cluster.[‡] Thus, neighbouring women include all women residing in the same neighbourhood as the respondent, excluding the respondent. We use the average media exposure of neighbouring women as an instrument for a woman's REI. The idea is that interaction with peers who are more exposed to media can shape a woman's own awareness of her rights, mobility, and access to resources, thereby influencing her resource empowerment. This reflects a process of social learning and norm diffusion, wherein media-exposed peers serve as channels of information and influence. Crucially, while peer media exposure may shape a woman's awareness and autonomy, it is unlikely to directly affect her household's internal decision-making dynamics except through her own empowerment, thus, satisfying the exclusion restriction.

We also find compelling results upon examining the relative importance of individual components of REI and relative decision-making power. First, we find statistically significant marginal effects for decisions pertaining to large household purchases, family visits, and how the

[‡] A cluster refers to a Primary Sampling Unit (PSU) or a segment of a PSU selected for data collection in the NFHS. Each cluster consists of 100-125 households and in every selected rural and urban cluster, 22 households are randomly selected for interview. In rural areas, these PSUs are generally villages, while in urban areas, they are Census Enumeration Blocks (CEBs).

husband's earnings are spent in a household. However, the effects on decisions about family visits and how husbands' earnings are spent become visible only at the upper tails of the distribution of women's REI. The marginal effects of greater resource empowerment on women's relative decision-making power consistently diminish, implying that women belonging to the lower tail of the distribution of resource empowerment experience a greater impetus to their intra-household decision-making power with a unit rise in their REI. Second, upon disaggregation of a woman's resource empowerment index (REI) into its components, the results indicate that having complete control over how a woman's earnings are spent, ownership of a bank account, knowledge of loans, owning a mobile phone and owning a house have the most significant effects on her relative decision-making power. Finally, we note interesting heterogeneous effects, in that the effects are stronger for older women, those residing in rural areas, non-working women, families where husbands are not educated or have only completed primary education, in larger households, and women bearing more daughters than sons. As before, in most cases, the effects are more prominent in sub-samples where the REI of women is lower, indicating diminishing effects of higher resource empowerment on decision-making.

2. Data

2.1. NFHS data

We utilize the fourth round of the National Family Health Surveys (NFHS-4) of India for the year 2015-16. NFHS is a nationwide cross-section demographic health survey for India. It provides information on various topics such as population demographics, health and nutrition, women empowerment, fertility preferences as well as domestic violence for India. It is conducted by the International Institute for Population Sciences (IIPS) in Mumbai administered under the Ministry of Health and Family Welfare (MoHFW), Government of India, and is a part of the global Demographic Health Survey (DHS) program. The DHS surveys for all countries are available at

<https://dhsprogram.com/>. The NFHS-4 survey was conducted between January 2015 and December 2016, and covered 601,509 households across India.

For a subset of the households in NFHS-4, couples are interviewed. It contains data for married couples or men and women who are living together, where both are declared to be married (or living together) to each other and have completed individual interviews as well. We have one record for every couple where the respondent is the woman. Our final sample consists of 54,827 observations, with women's ages between 15 - 49 years and men's between 16 - 54 years. The unit of analysis for our purpose is the woman in household h .

2.2. Woman's relative decision-making power

Our outcome variable is a woman's relative decision-making power within a household. NFHS asks the respondents detailed questions pertaining to decision-making within the households in five categories. These categories include questions on “who usually makes decisions about health care, household purchases, about family visits, how respondent's earnings are spent, how the husband's earnings are spent”. A decision could be made by one of the spouses, jointly, or by someone else. We categorize the decision-making variable into three, giving a value of 0 when someone else takes the decision or the partner alone takes the decision, 1 when it is taken jointly, and 2 when the decision is taken by the respondent alone. Using these answers, we construct a direct measure of women's relative decision-making power within households by taking the average over each decision component. Given that each decision is an ordered variable, our constructed variable takes on values ranging from 0 to 2. For the purpose of our analysis, we consider this variable as a continuous variable.

2.3. Resource Empowerment Index

Our main variable of interest is the **Resource Empowerment Index (REI)**, which captures the economic resources that a woman owns or controls. Drawing on questions from the NFHS-4 survey, we include whether a woman independently owns a bank account, land, a house, or a

mobile phone; whether she has full control over her own money; whether she is literate enough to read SMS messages; and whether she has knowledge of loans or has ever taken a loan. We code each component as a binary indicator, taking the value 1 if the response is yes, and 0 otherwise. This construction is grounded in a substantial body of literature linking these aspects to women's economic agency and empowerment. For example, ownership of a bank account reflects financial independence and has been shown to improve economic outcomes and bargaining power (Prina, 2015). Land and property ownership strengthen women's security and reduce vulnerability to violence (Allendorf, 2007; Panda & Agarwal, 2005b). Mobile phone ownership enhances access to information and financial services, supporting greater autonomy (Sekabira & Qaim, 2017). Control over personal earnings is widely recognized as a key indicator of agency (Anderson & Eswaran, 2009b; Kabeer, 1999b; Quisumbing & Maluccio, 2003b). Literacy facilitates access to information and decision-making (Ogbadu-Oladapo et al., 2024; Rowlands et al., 2015), while knowledge and participation in credit systems reflect economic engagement and financial empowerment (Banerjee et al., 2015; Pitt & Khandker, 1998; Swain & Wallentin, 2009). As such, we construct the REI by averaging the eight binary responses, resulting in an index that ranges from 0 to 1, with higher values indicating greater resource-based empowerment.

2.4. Selection of controls

Our set of controls includes household-level characteristics such as household wealth, age of the head of the household, gender of the head of the household, household size, number of years a family has stayed in one place, number of sons and number of daughters, number of wives, indicators for religion (Hindu, Muslim, Christian, Sikh, Buddhist, Jain, other religion), dummy for area of residence. Individual level controls include the age of the respondent, an indicator of the respondent's employment status, an indicator of whether the respondent's husband is working, the husband's age, educational characteristics of the respondent and her husband, the number of respondent's sexual partners, whether the woman is sexually active, respondent's age at marriage

as well as her age at first childbirth. Table 1 shows the descriptive statistics of all the variables included in the main estimations.

Table 1. Summary Statistics

	Mean	SD	Min	Max	Total count
Wife's mean decision making (DCW)	0.830	0.420	0	2	54827
Wife's Resource Empowerment Index (REI)	0.359	0.230	0	1	54827
DCW on health	0.767	0.423	0	1	54827
DCW on HH purchases	0.758	0.428	0	1	54827
DCW on family visits	0.768	0.422	0	1	54827
DCW on husband's earnings	0.739	0.439	0	1	53839
DCW on wife's earnings	0.827	0.378	0	1	13931
Exposure of neighbourhood women	2.910	1.573	0	9	54649
Wife owns mobile	0.458	0.498	0	1	54827
Wife has control over her own money	0.411	0.492	0	1	54827
Wife has a bank account	0.521	0.500	0	1	54827
Wife can read sms	0.670	0.470	0	1	24044
Wife has knowledge about loans	0.393	0.488	0	1	54827
Wife has taken loan	0.197	0.398	0	1	21557
Wife owns land	0.175	0.380	0	1	54827
Sikh	0.021	0.144	0	1	54827
Christian	0.073	0.261	0	1	54827
Muslim	0.130	0.336	0	1	54827
Hindu	0.747	0.435	0	1	54827
Other religion	0.011	0.106	0	1	54827
Husband's age	37.961	8.239	16	54	54827
Wife's educational attainment	5.836	5.128	0	20	54827
Husband's educational attainment	7.453	4.925	0	20	54827
Wife marriage to first birth interval	27.419	24.165	0	319	49620
Wife's age to first birth interval	20.731	3.842	5	46	50850
Wife: Number of sex partners	0.002	0.047	0	2	51009
Wife: sexually active	0.826	0.379	0	1	50419
Couple living together	0.997	0.058	0	1	54827
Wife's literacy	1.162	0.951	0	2	54759
Husband's literacy	1.489	0.824	0	2	54736

3. Estimation and Identification Strategy

First, we estimate the impact of a woman's resource empowerment on her relative decision-making power in the household using Ordinary Least Squares (OLS) with district fixed effects.

$$DCW_h = \alpha + \beta REI_h + \gamma X_h + \eta Z_h + \mu_d + \epsilon_h$$

where DCW_h is the relative decision-making power of the woman in household h (averaged over the five household decisions), REI_h is our measure of woman's resource empowerment in the

house, X_h denotes the vector of household level controls, Z_h is the vector of individual level controls in the household, μ_d capture the district dummies, and ϵ_h is the idiosyncratic error term. Our variable of interest is β , which captures the effect of a woman's REI on her relative decision-making power in household h relative to a woman in household h' . All standard errors are clustered at the district level.

Although we begin our analysis with OLS estimation, a potential threat to identification with this procedure is endogeneity in REI on account of reverse causality, omitted variable bias, and measurement error. Not only will a woman's control over resources affect decisions in the household, but who has greater decision-making power in the house may potentially affect ownership and access to resources, affecting her REI. In addition, there may be unobserved factors that influence both a woman's REI and her household decision-making power. For example, progressive family norms might simultaneously encourage women's REI and involve them more in family decisions. Similarly, community-level factors, such as exposure to women's groups or local development programs promoting gender equality, might also influence both our outcome variables and our endogenous variable, however, remain unobserved in the NFHS data. Finally, self-reported data on asset ownership or control may suffer from inaccuracies, either because women may overstate their control (due to social desirability bias) or because definitions of ownership vary across contexts. For example, a woman might report owning a bank account, but in practice, she may require permission from other family members to use it, making her actual control more limited than indicated. Such measurement errors can attenuate the estimated effects, leading to biased or underestimated relationships. Therefore, a simple OLS estimation is unlikely to yield unbiased and consistent estimates of the impact of a woman's resource empowerment on her relative decision-making power. To alleviate these concerns, we employ an instrumental variable (IV) framework with fixed effects to alleviate such concerns.

Our instrument is based on the exposure of women to various forms of media. NFHS-4 includes questions pertaining to women's exposure to television, radio, and newspapers, which we

utilize to construct our instrument. First, we define $Exposure_h$ as the respondent's sum-total of exposure to television, radio and newspaper, where exposure to each is a categorical variable in the range [0,3]. For instance, exposure to television takes on four values: 0 (*no exposure*); 1 (*less than once a week*); 2 (*at least once a week*); and 3 (*almost every day*). This makes $Exposure_h$ a continuous variable in the range [0,9]. A woman's exposure to such forms of media will likely affect her relative decision-making power through her resource empowerment. However, when we think of the exposure of the respondent herself, one could argue that it may not be completely exogenous to the decision-making process within the house, likely violating the exclusion restriction required for a valid IV. Thus, we construct our IV using the spatial distribution of women's exposure to media in the neighbouring clusters. More specifically, we take the average exposure of women to mass-media in the neighbouring cluster of the respondent's residence, excepting the respondent herself. We denote it as $Exposure_{-h}$. The first stage is given by the following:

$$REH_h = \theta + \delta Exposure_{-h} + \rho X_h + \omega Z_h + \mu_d + \epsilon_h$$

We argue that $Exposure_{-h}$ - the leave-one-out average media exposure of neighbouring women - is strongly correlated with a woman's relative decision-making power within household, by influencing her own awareness, aspirations, and control over resources. This establishes the *relevance* of the instrument, as peer media exposure is a credible driver of a woman's REI. We further believe that $Exposure_{-h}$ affects DCW_h *only through* its impact on her own exposure and, in turn, her autonomy, satisfying the *exclusion restriction*. We use this IV specification as our preferred baseline for estimating the causal effect of women's resource control on their relative decision-making power. As before, all standard errors are clustered at the district level.

4. Results

4.1. Ordinary Least Squares Results

We present the baseline results showing the association between a woman's REI and her relative decision-making power within the household in Table 2. Columns (1) - (3) show the OLS estimates

from Equation. 1. In all the specifications, we include a basic set of individual and household characteristics. We find a positive correlation between REI and decision-making power in column (1). Including district fixed effects and additional individual and household level controls results in a statistically significant increase of 0.353 units in a woman's decision-making power in household h . In other words, one standard deviation (SD) rise in a woman's REI leads to 0.19 SD increase in her decision-making power. For ease of interpretation of the magnitude of our estimates, throughout the paper, we discuss our results using *standardized coefficients*.[§] Alternatively, an increase in the mean REI of women from the 25th percentile to the 75th percentile of the REI distribution leads to a 0.12 unit increase in her decision-making power within the household. 25th percentile of the mean REI distribution is 0.167, and the 75th percentile is 0.5. This 0.33-unit increase in her REI implied a 0.12-unit increase in her decision-making power within the household.

4.2. Instrumental Variable Results

Columns (4) - (7) show the result of the IV estimation. Moving from Column (4) to (7), we sequentially add other individual and household characteristics and district-fixed effects. Column (7) is our most preferred specification, and we observe that a unit increase in a woman's REI leads to a statistically significant increase in her decision-making power by 0.871 units. In other words, a 1 SD increase in the woman's REI leads to a 0.477 SD increase in her intra-household decision-making power. Looking at the distribution of REI, an increase in the mean REI from the 25th percentile to 75th percentile of the distribution leads to a 0.29 unit increases in her decision-making power within the household. More specifically, if we compare two households, household A lying at the 25th percentile and household B lying at the 75th percentile of the distribution of mean REI of women, then our results imply that the intra-household decision-making power of the woman

[§] To do so, we multiply our regression estimates with SD_x/SD_y , which can be obtained from Table 1.

in household B will be 0.29 units more than the woman in household A and this effect is statistically significant.

We perform several diagnostic tests to assess the efficiency and reliability of our IV. Our models fare well in the specification tests (rk-LM test Kleibergen & Paap, 2006 for under-identification and F-test for the excluded instrument). The first stage results showed a positive and significant relationship between women's cluster average of exposure to media, except the respondent herself and her REI.**

Table 2. Baseline OLS and IV estimates: Effect of women's REI on her intra-household decision making power

	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Women's REI	0.357*** (0.013)	0.332*** (0.014)	0.353*** (0.013)	0.580*** (0.068)	0.928*** (0.266)	0.871*** (0.244)
Other Individual Characteristics	N	Y	Y	N	Y	Y
Other HH Characteristics	N	Y	Y	N	Y	Y
District FE	N	N	Y	N	N	Y
First Stage F Statistic				486.788	44.832	59.942
Kleibergen-Paap rK-LM Statistic				226.131	41.784	54.421
Endogeneity Test P-Value				0.001	0.015	0.034
Observations	54,826	45,518	45,518	54,648	45,378	45,378

Notes: The sample is restricted to couples (married or living together) where women's age range between 15-49 years and men's between 16-54 years. Dependent variable in all specifications is average relative decision making power of woman in the household. In all specifications, we include a basic set of individual and household characteristics, namely, dummy for rural areas, age and gender of the head of HH, HH size, age of the respondent(woman), number of wives, numbers of sons and daughters and indicator of couple's employment statuses. Col. (1) shows OLS baseline with basic controls and FE. Col. (2) repeats the baseline OLS with controls and no FE. Col. (3) is OLS baseline with individual and HH controls as well as district FE. Col. (4) - (6) are IV estimations. Col (6) is the preferred specification estimated via IV with HH and individual level controls and district FE. We sequentially add our complete set of individual and household characteristics. Standard errors are clustered at the district level. ***, **, and * represent significance at 1%, 5% and 10%, respectively.

** As robustness checks, we re-estimate our baseline IV strategy by disaggregating the IV into neighbouring women's exposure to radio, newspaper and TV separately. The results are included in the Appendix. We also provide evidence of positive and statistically significant effect of REI on decision-making power after inclusion of neighbourhood level controls to capture community norms to alleviate concerns of omission of variables. Finally, we provide the robustness of our results utilizing alternative estimation strategies. These results are provided in the Appendix.

5. Extensions

5.1. Disaggregated Decision-making

Further, we disaggregate the decision-making variable into its different components. DCW_h is an average over five different decisions in the house pertaining to respondent's health care, large household purchases, family visits, respondent's earnings and husband's earnings. For the purpose of this analysis, we define each of these decisions as $DCWHealth_h$, $DCWHHPurch_h$, $DCWFamvisit_h$, $DCWearnings_h$, $DCWearnings_h$ respectively, that equals 1 if the woman decides alone or jointly with her partner and 0 otherwise (i.e. whether or not a woman has some say in the decision). We then estimate five separate models to measure the effect of the woman's REI on the five decisions. We utilize an IV - Probit estimation technique as described below^{††}:

$$Y_h = \theta + \delta REI_h + \gamma X_h + \eta Z_h + \mu_d + \epsilon_h$$

where y_h is a binary indicator of a woman having some say in decisions pertaining to health care, large household purchases, family visits, her husband's earnings, and her own earnings, respectively. Our coefficient of interest β captures the effect of REI on the likelihood that the woman in household h has *some* say in decisions.

Figure 1 shows strong positive correlations between our measure of women's REI and the disaggregated decisions made in the household, ranging from health expenditures to how the woman's own money is spent. Table 3 presents the marginal effects (ME) of REI on disaggregated decision variables. Each column represents a different decision category in the household. We evaluated the marginal effects of REI on separate decisions at equi-spaced percentiles of the distribution of REI.^{‡‡}

^{††} Since a fixed effects Probit model is not feasible, in order to capture the district-fixed effects, we include the means of all the controls at the district level as additional controls in the model.

^{‡‡} The 20th and 30th percentile of the distribution of REI coincides at the same value. Hence, we report only the 30th percentile effect in Table 3 for all decisions.

Figure 1. Correlation between average REI and disaggregated decision-making

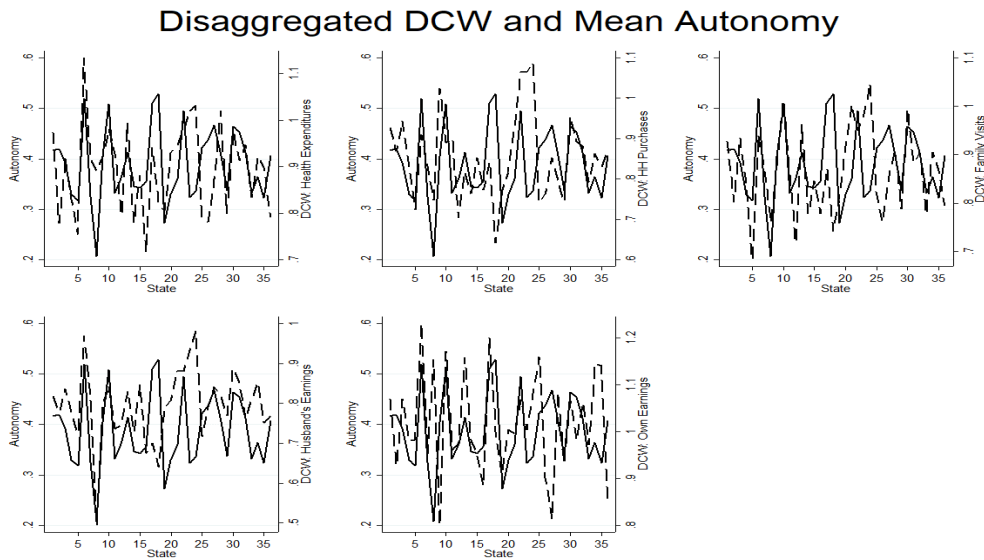


Table 3. Extensions: IV-Probit estimation – marginal effect of women's REI on her intra-household decision making

Distribution of Women's REI	Decisions regarding				
	Health Expenditures	HH Purchases	Family Visits	Husband's earnings	Wife's earnings
10th Percentile	0.304 (0.308)	0.636** (0.284)	0.476 (0.321)	0.378 (0.296)	0.19 (0.613)
30th percentile	0.283 (0.276)	0.589** (0.275)	0.437 (0.291)	0.354 (0.272)	0.175 (0.535)
40th percentile	0.265 (0.245)	0.532** (0.238)	0.4 (0.252)	0.332 (0.244)	0.164 (0.475)
50th percentile	0.257 (0.232)	0.506** (0.217)	0.383 (0.233)	0.322 (0.231)	0.16 (0.450)
60th percentile	0.242 (0.204)	0.449*** (0.171)	0.349* (0.192)	0.302 (0.202)	0.151 (0.401)
70th percentile	0.229 (0.182)	0.405*** (0.134)	0.322** (0.160)	0.286 (0.178)	0.137 (0.327)
80th percentile	0.217 (0.160)	0.360*** (0.098)	0.294** (0.128)	0.269* (0.154)	0.132 (0.300)
90th percentile	0.208 (0.143)	0.326*** (0.072)	0.274*** (0.105)	0.256* (0.136)	0.124 (0.256)
Observations	45,378	45,378	45,378	44,608	11,857

Notes: The sample is restricted to couples (married or living together) where women's age range between 15-49 years and men's between 16-54 years. Dependent variable in all specifications is average relative decision making power of woman in the household. The results report the average marginal effects of REI on each of the individual components of intra-HH decision-making, at the different percentiles of the distribution of mean autonomy. The 20th and 30th percentile of the distribution coincide at the same value and hence we only report the margins at the 30th percentile. All specifications include our complete set of individual and household characteristics. Standard errors are clustered at the district level. ***, **, and * represent significance at 1%, 5% and 10%, respectively.

We note positive and statistically significant ME of a woman's REI on her decision-making power regarding large household purchases, family visits and how her husband's earnings are spent (columns (2), (3) and (4)). These effects are statistically significant only from the 60th percentile and 80th percentile of the distribution of REI for decisions regarding family visits and husband's earnings, respectively. However, the effects are statistically significant at all points of the REI distribution for large household purchases. This is in line with the evidence suggesting that expenditure on household purchases is an aspect of decision-making in Indian households that women are highly involved in, given that women value household welfare-improving commodities more in the family. We find no such an impact on her health expenditure, perhaps owing to the fact that bigger monetary decisions are typically taken by the men in the family (Hoddinott & Haddad, 1995). Looking at how the husband's earnings are spent, the ME becomes significant at the upper tail of the distribution. This is not surprising, given the patriarchal nature of Indian households. In such contexts, for a woman to have some say in how her husband's earnings are spent likely requires women to have very high REI. We also observe no significant effects on how the wife's earnings are spent. Interestingly, we consistently find that the ME diminishes in magnitude as we move across the distribution of REI, indicating diminishing returns to her agency. This implies that women in the lower tail of the REI distribution see a much greater impetus to their decision-making from a small increase in their REI.

5.2. *Disaggregated Resource Empowerment*

We also explore the components of REI to tease out specific factors driving our baseline results. We disaggregate REI into its eight components, rendering the variable binary. REI_h now takes the value 1 if for any of the above questions, the answer is yes, and 0, otherwise. We estimate eight specifications as follows:

$$DCW_h = \theta + \delta REI_h + \gamma X_h + \eta Z_h + \mu_d + \epsilon_h$$

Our parameter of interest β captures the effect of each component of REI on DCW_h . Figure 2 depicts the strong initial association between the disaggregated components of REI and her average relative decision-making power.

Figure 2. Correlation between average decision-making and disaggregated REI

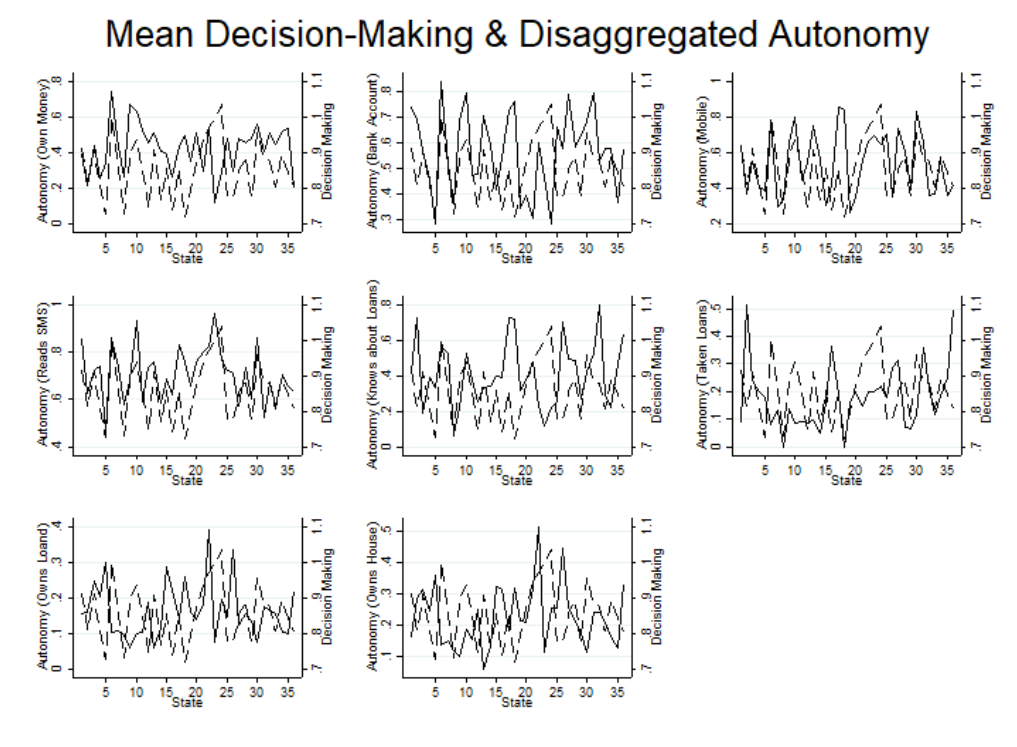


Table 4 presents the effects of each REI category on her decision-making power. The results provide useful insights into the channels that yield the greatest boost to a woman's REI for her decision-making power in the household. Out of the eight measures of REI, we find statistically significant and positive effects for five different measures (Columns (1), (2), (3), (5) and (8)). From Column (1), we observe that the woman's relative decision-making power increases by 0.89 units if she has complete control over how her own money is spent. Similarly, Columns (2) and (3) show that the effect increases by approximately 0.5 units if she owns a bank account and by 0.75 units if she owns a mobile phone. Column (5) shows an increase in decision-making by 0.78 units if the woman has knowledge of loans. In summary, we posit that women's monetary/financial independence in terms of having funds over which she has sole control, ownership of their own

bank account and knowledge of loans has a more significant impact on their intra-household decision-making power relative to ownership of other physical assets such as houses or land.

Table 4. Extensions: Estimates of the effect of REI on decision-making- Disaggregated measures of REI

	Own Money	Bank account	Mobile	Reads SMS	Knows loan	Taken loan	Owens land	Owens house
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Component of REI	0.895*** (0.320)	0.493*** (0.156)	0.751*** (0.255)	0.504 (0.540)	0.784** (0.307)	0.892 (0.649)	2.674 (2.207)	1.099** (0.454)
First Stage F Statistic	10.617	39.936	23.831	5.671	10.817	4.500	1.512	8.122
Kleibergen-Paap rK- LM Statistic	10.615	37.143	22.733	5.798	10.742	4.609	1.540	8.109
Endogeneity Test P- Value	0.003	0.004	0.002	0.369	0.002	0.076	0.001	0.001
Observations	45,378	45,378	45,378	19,541	45,378	18,361	45,378	45,378

Notes: The sample is restricted to couples (married or living together) where women's age range between 15-49 years and men's between 16-54 years. Dependent variable in all specifications is average relative decision making power of woman in the household. Col. (1) through (8) include REI disaggregated into its different components: control over own money, ownership of bank account, mobile, ability to read SMS, knowledge of loans, ever taken loan, ownership of land and house respectively. All estimations are IV estimations with district FE. All specifications include our complete set of individual and household characteristics. Standard errors are clustered at the district level. ***, **, and * represent significance at 1%, 5% and 10%, respectively.

6. Heterogeneity analysis

We also explore the heterogeneous effects of women's REI on their bargaining power by varying our sub-samples by *women's age, husband's education and employment, own employment, area of residence, household size and gender composition of kids*.

By age: We divide our sample to the age group of women in three categories - less than 25 years, 26 - 35 years and older than 35 years. Table 5 presents the results. We note statistically significant and positive effects for older women. 1 SD increase in a woman's REI leads to a 0.411 SD increase in her intra-household decision-making power for the age group 26-35 years and a 0.586 SD increase for the age group 35 and above. Higher REI does not seem to affect younger married women's decision-making power.

Table 5. Heterogeneity analysis: Effects by woman's age

	Less than 25	25-35	More than 35
	(1)	(2)	(3)
Women's REI	0.474 (0.657)	0.751** (0.303)	1.070*** (0.400)
<i>Mean REI in Sample</i>	0.318	0.365	0.366
First Stage F Statistic	9.344	39.720	22.905
Kleibergen-Paap rK-LM Statistic	10.438	37.628	22.711
Endogeneity Test P-Value	--	0.189	0.071
Observations	5,163	22,044	18,171

Notes: From Col. (1) through (3), the sample is restricted to couples where women's age <25, women's age is 25-35 years and women's age >35 years respectively. Dependent variable in all specifications is average relative decision making power of woman in the household. All estimations are via IV approach with district FE. In Column (1), the endogeneity test p-value is not reported because the sample size is very small. All specifications include our complete set of individual and household characteristics. Standard errors are clustered at the district level. ***, **, and * represent significance at 1%, 5% and 10%, respectively.

By husband's characteristics: We study the heterogeneous effects between samples with educated husbands versus uneducated husbands. Table 6 presents the results. From columns (1) and (2), we note a large impact of female REI on her decision-making power with uneducated husbands than when the husband has some formal education. We then delve deeper to understand the dynamics in households with more educated versus less educated husbands. Interestingly, columns (3) - (5) suggest that in households with more educated husbands, the effects of REI on women's relative decision-making power disappear. We only find a statistically significant positive effect in households with the least educated husbands (only primary education). As before, the results here indicate a diminishing effect of REI on a woman's bargaining power. Comparing columns (2), (4) and (5), we note that the sub-sample with the lowest mean REI of women is where we find the greatest impact on intra-household bargaining. The same holds if we compare columns (1) and (2).

Table 6. Heterogeneity analysis: Effects by husband's education level

	Not Educated	Educated	Primary	Secondary	Higher
	(1)	(2)	(3)	(4)	(5)
Women's REI	2.400** (0.959)	0.583** (0.249)	1.450** (0.616)	0.251 (0.289)	1.428 (1.136)
<i>Mean REI in Sample</i>	0.274	0.377	0.304	0.372	0.499
First Stage F Statistic	6.995	55.779	12.255	43.312	2.926
Kleibergen-Paap rK-LM Statistic	7.361	51.527	12.865	41.320	3.306
Endogeneity Test P-Value	0.005	0.338	0.061	0.789	0.246
Observations	8,411	36,967	7,618	23,802	5,547

Notes: From Col. (1) and (2), the sample is restricted to couples where the husband is uneducated and educated respectively. In Columns (3) through (5) the sample is further subdivided into couples where the husband has primary education, secondary education, or even higher levels of education. Dependent variable in all specifications is average relative decision making power of woman in the household. All estimations are via IV approach with district FE. All specifications include our complete set of individual and household characteristics. Standard errors are clustered at the district level. ***, **, and * represent significance at 1%, 5% and 10%, respectively.

By employment status: We repeat our baseline regressions by varying the employment status of husbands and wives in the households. Table 7 presents the results. Specifically, we consider four sub-samples - employed women, unemployed women, employed men and unemployed men respectively. Columns (1) - (3) suggest that female REI has a statistically significant effect on a woman's decision-making power for households with working women, non-working women, and working men. An increment to an unemployed woman's REI results in a large effect than a woman who is employed and already has a higher status in the house. This is confirmed by the mean REI levels of women in these four sub-samples. The lower the mean or baseline levels of REI, the larger the boost to her bargaining power.

Table 7. Heterogeneity analysis: Effects by employment status of husband and wife

	Working women	Non- working women	Working men	Non-working men
	(1)	(2)	(3)	(4)
Women's REI	0.853** (0.352)	0.900*** (0.265)	0.850*** (0.208)	0.451 (3.250)
<i>Mean REI in Sample</i>	0.382	0.351	0.361	0.335
First Stage F Statistic	31.023	64.342	101.357	0.336

Kleibergen-Paap rK-LM				
Statistic	32.699	65.240	102.241	0.404
Endogeneity Test P-Value	0.170	0.029	0.013	--
Observations	11,737	33,641	41,697	3,681

Notes: From Col. (1) through (4), the sample varies by couples' employment statuses. Dependent variable in all specifications is average relative decision making power of woman in the household. All estimations are via IV approach with district FE. In Column (4), the endogeneity test p-value is not reported because the sample size is very small. All specifications include our complete set of individual and household characteristics. Standard errors are clustered at the district level. ***, **, and * represent significance at 1%, 5% and 10%, respectively.

By area: Additionally, we study our effects by rural and urban areas. From Table 8, we find a positive and statistically significant effect in the rural sub-sample suggesting that our baseline results are driven by the rural sample. Rural areas exhibit lower mean REI levels, confirming that an increment in REI for women with lower mean REI levels leads to more considerable changes in their household bargaining power.

Table 8. Heterogeneity analysis: Effects by area (rural vs urban)

	Urban	Rural
	(1)	(2)
Women's REI	0.725 (0.731)	0.757*** (0.286)
<i>Mean REI in Sample</i>	0.422	0.332
First Stage F Statistic	5.785	42.311
Kleibergen-Paap rK-LM Statistic	5.924	38.010
Endogeneity Test P-Value	0.605	0.157
Observations	13,650	31,728

Notes: From Col. (1) through (2), the sample is restricted to rural and urban areas respectively. Dependent variable in all specifications is average relative decision making power of woman in the household. All estimations are via IV approach with district FE. All specifications include our complete set of individual and household characteristics. Standard errors are clustered at the district level. ***, **, and * represent significance at 1%, 5% and 10%, respectively.

By household size: We consider three different household sizes - less than 5 members, 5 - 7 members, and more than 7 members. From Table 9, we see a positive impact on women's decision-making power but it is not statistically significant for small families (column (1)). The effect is statistically significant and positive for women in families with 5 - 7 members. Column (2) shows that a 1 SD increase in female REI leads to an approximately 0.55 SD increase in decision-making

power. Again, we note that for the sub-sample where the mean REI of women is higher, the effect a one-unit increase in REI has on bargaining power is lower than for the sub-sample where the mean REI of a woman in the sample is lower. This is confirmed by columns (2) and (3).

Table 9. Heterogeneity analysis: Effects by household size

	Less than 5 members	5 to 7 members	More than 7 members
	(1)	(2)	(3)
Women's REI	0.281 (0.420)	1.007*** (0.256)	2.617** (1.281)
<i>Mean REI in Sample</i>	0.383	0.348	0.308
First Stage F Statistic	22.793	44.808	5.128
Kleibergen-Paap rK-LM Statistic	23.053	41.595	5.782
Endogeneity Test P-Value	0.909	0.012	--
Observations	17,831	23,146	4,401

Notes: From Col. (1) through (3), the sample is restricted to couples where HH size is less than 4, between 5- 7 members and more than 7 members respectively. Dependent variable in all specifications is average relative decision making power of woman in the household. All estimations are via IV approach with district FE. In Column (3), the endogeneity test p-value is not reported since the sample size is very small. All specifications include our complete set of individual and household characteristics. Standard errors are clustered at the district level. ***, **, and * represent significance at 1%, 5% and 10%, respectively.

By gender composition of children: We re-estimate the baseline specification by varying the sample by the gender composition of children in the households. Table 10 presents the results. We begin with households with no children and find a strong positive impact of a woman's REI on her decision-making power. Caution is warranted while interpreting the coefficient as the number of observations falls drastically in this specification, and the IV performs poorly. Columns (2) - (4) show the results when we consider families with more sons, an equal number of sons and daughters, and more daughters. Interestingly, in families where there are a greater number of sons than daughters, higher REI has a smaller impact on a woman's decision-making power compared to families with more daughters than sons. In fact, a 1 SD increase in a woman's REI leads to 0.47 SD increase in her relative decision-making power if she has more boys than girls (see column (2)). As opposed to the general understanding of cultural norms, this effect has a higher magnitude

(0.68 SD) in families with more daughters (column (5)). Column (3) shows that conditional on having the same number of sons and daughters, greater REI still leads to higher relative bargaining power for women in the household.

Table 10. Heterogeneity analysis: Effects by gender composition of kids

	No kids	Sons>Daughters	Sons=Daughters	Sons<Daughters
	(1)	(2)	(3)	(4)
Women's REI	1.983* (1.158)	0.861** (0.380)	0.534* (0.316)	1.254** (0.564)
<i>Mean REI in Sample</i>	0.352	0.352	0.372	0.354
First Stage F Statistic	0.122	29.155	33.382	13.304
Kleibergen-Paap rK-LM Statistic	2.314	28.451	32.799	13.572
Endogeneity Test P-Value	--	0.179	0.566	0.085
Observations	230	18,162	11,904	15,312

Notes: From Col. (1) through (4), the sample is restricted to couples having no children, more sons, equal number of sons and daughters, and more daughters respectively. Dependent variable in all specifications is average relative decision making power of woman in the household. All estimations are via IV approach with district FE. All specifications include our complete set of individual and household characteristics. Standard errors are clustered at the district level. ***, **, and * represent significance at 1%, 5% and 10%, respectively.

7. Discussion & Conclusion

We empirically examine the impact of a woman's Resource Empowerment Index (REI) on her intra-household decision-making power. The foremost challenge in analysing such a question is that REI and intra-household decision-making power are highly interlinked latent variables. Therefore, we utilize an Instrumental Variable (IV) approach to estimate a causal effect of women's REI on their relative decision-making within the households.

We find robust, positive, and statistically significant effects of REI on decision-making power. A one standard deviation increase in a woman's REI leads to nearly a half standard deviation increase in her relative bargaining power. When we disaggregate decision-making outcomes, we observe positive marginal effects of REI on decisions regarding large household purchases, family visits, and how the husband's earnings are spent. However, the effects on family visits and control over

the husband's earnings are statistically significant only at very high levels of REI. Across all decisions, we consistently find evidence of diminishing marginal effects of REI. This pattern holds in our heterogeneity analysis as well. In particular, we find that the marginal impact of REI on decision-making is significantly larger among women who are more disadvantaged—those who are unemployed, live in larger households or rural areas, or have less educated husbands. This suggests that incremental improvements in REI may be especially empowering for women starting from a lower base.

We also find suggestive evidence that having full control over one's own earnings, sole ownership of a bank account, access to a mobile phone, and awareness about loans contribute more substantially to a woman's REI than ownership of physical property. While we attempt to disaggregate the REI measure to examine the individual contributions of its eight components, doing so causally would require eight separate instruments, which is infeasible. Since our instrument is designed for the composite REI index, the disaggregated results should be interpreted as associations rather than causal estimates.

While our main findings align with existing literature, we believe that our paper contributes to this body of work in three ways. First, we construct comprehensive and multidimensional measures of both REI and intra-household decision-making using nationally representative data of 54,827 couples. Second, given the complexity of the relationship between REI and decision-making, there is a large ambivalence about the direction of causality. It is often difficult to disentangle decision-making power from female REI due to a simultaneity bias. We address the endogeneity concerns using a spatial instrument based on neighbouring women's media exposure in a leave-on-out strategy. Third, it uncovers diminishing marginal effects of REI on bargaining power—a finding with significant implications for targeting empowerment policies.

From a policy perspective, our findings support the design of empowerment policies that prioritize women's financial independence—for example, direct benefit transfers into women's personal bank accounts, promotion of mobile banking, and targeted financial literacy programs. Further,

given stronger returns at lower levels of REI, such programs ought to be targeted toward rural, less educated, and unemployed women. Decades of research have extensively refuted the unitary model of households, establishing that the preferences of men and women are distinct when it comes to the allocation of resources within the household. Given that women are the primary caregivers in the family, extant literature indicates large benefits of higher bargaining and decision-making power of women within a household on the well-being of their family as well as on future generations. In light of this, our findings reiterate the importance of considering policies that focus on providing women with greater financial autonomy.

Finally, our findings should be interpreted with some important caveats. While we use a composite index of decision-making power based on women's self-reported survey responses, such measures may not fully capture genuine agency. As Jayachandran & Voena, (2025) emphasize, NFHS based questions often reflect token participation or socially permitted roles rather than true control over household decisions. That said, even if women's reported involvement is influenced by such dynamics, documenting shifts in their relative bargaining positions as a result of greater autonomy captured through our multidimensional REI remains important. These changes suggest improvement in status, evolving gender norms within households, and incremental steps toward more substantive empowerment. By capturing variation across several economic and informational dimensions, our REI provides a richer picture of the resources women can leverage in intra-household negotiations.

Future research ought to build on this by improving how bargaining power is measured. This could include developing more nuanced survey instruments, incorporating couple-level data, and using qualitative methods to better understand the negotiation process within households. In addition, further exploration of how spousal differences in education, employment, and preferences shape the relationship between REI and household decision-making would offer deeper insight into the dynamics of empowerment.

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