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DO REHABILITATION INSTITUTIONS FROM LAND ACQUISITION FIT WITH FARMERS' PREFERENCES? RESULTS FROM A CONTINGENT RANKING EXPERIMENT IN INDIA

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Abstract

Large scale land acquisitions for developmental work around the world lead to displacement of near about 10-15 million people annually. Majority of them, especially in developing countries, end up being worse off. We argue that institutional fit can render rehabilitation measures effective. This is shown empirically through a contingent ranking experiment on 200 farmers in the catchment area of a large-scale irrigation project in India. Results suggest that landowners, given a choice, prefer land or employment based compensation over the existing method of monetary compensation. In the context of land acquisition and associated rehabilitation and resettlement (R&R), we find that preference as an indicator of acceptance helps contextualize institutions. Our results come at a critical juncture where newly enacted land acquisition policies in India are facing huge political resistance. It provides concrete evidence that the design of R&R needs to include landowners' preferences.

Key Words: Choice Experiment, Farmers' Preferences for Compensation, Institutional Fit, Land Acquisition, Rehabilitation & Resettlement

1. Introduction

Rent from land is persistently under strain due to competing claimants – individuals, community or the state. Implementation of large scale development projects such as dams is hardly free from such conflicts. This is more so as they risk irreversible negative social and economic consequences (Brand, 2001; Cernea, 1997; Lam & Paul, 2013; Nolte & Voget-Kleschin, 2014). Each year close to 10-15 million people are involuntarily displaced as a consequence of development projects worldwide (Stanley, 2000). Involuntary acquisition necessitates displacement of the landowners from their deep rooted locations. While it's a global phenomenon, the ill-effects are more pronounced in Asian and African nations (German, Schoneveld, & Mwangi, 2013; Nolte, 2014; Rulli, Saviori, & D'Odorico, 2013). In Africa, foreign states and corporations acquire land mainly for agricultural production, mining, and infrastructure (German et al., 2013; Weng et al., 2013). In Asia, land acquisition occurs primarily for irrigation, infrastructure, and other industrial developments.

Studies have shown that development projects create negative impacts for the displaced even where institutional mechanisms for rehabilitation and resettlement (R&R) exist (Bank, 1998; Cernea, 2003, 2004b; CJ De Wet, 2006; Kanbur, 2003; Kusiluka, Kongela, Kusiluka, Karimuribo, & Kusiluka, 2011; Lam & Paul, 2013; Mathur, 2006b; Patil & Ghosh, 2017; Patil, Ghosh, & Kathuria, 2016; Singh, 2012). Some of the prominent reasons are inadequate monetary compensation, poor governance, loss of social capital, high transaction costs and lack of access to compensation. Scholars argue that there is a fundamental weak link in the form of a low level of local population's participation in policy design (Asif, 1999; Bagchi, 2012; Brand, 2001; Cernea, 1997, 2004a; Cotula & Vermeulen, 2011; Chris De Wet, 2001; German et al., 2013; Kusiluka et al., 2011; Nolte & Voget-Kleschin, 2014; Scott, 1998). Weak communication between the stakeholders and the state leads to exclusion of local preferences in post-displacement risk mitigation. The flip side is that local representation in policy design forums require conditions that are not easy to achieve. For instance, it is difficult to separate 'voice' from 'noise', interactions need to be non-sporadic and land records have to be complete (Brand, 2001; Cotula & Vermeulen, 2011; Nolte & Voget-Kleschin, 2014). Despite these challenges, the local endorsement of existing R&R instruments cannot be ignored. Examining landowners' preferences could facilitate, firstly, in understanding the gaps within the current provisions. Secondly, it may provide insights on what drives those preferences.

In this paper, we base on the framework of *institutional fit* given by DeCaro and Stokes (2013) to assess the *acceptance* of land acquisition related R&R through the choice modeling technique of contingent

ranking. In an exercise of choice experiment, 'about-to-be-displaced' landowners are asked to rank a discrete set of compensation options in a descending order of preference. The participants are 200 village landowners sampled from a region that is going to be acquired for the third phase of Upper Krishna Irrigation Project (UKP) in Karnataka, India. The choice sets used for contingent ranking comprises relevant attributes at different levels which are identified from the literature and the past instances of displacement and rehabilitation. Participants are asked to rank a set of six alternative options separately for complete and partial land acquisition (CLA and PLA) conditions. The farmers' choice for different options is estimated using the Rank-ordered Logit Model (ROLM). Results suggest that landowners prefer land or employment based compensation over the existing method of monetary compensation. The size of land-holding and education influence the individual preferences for different compensation options. Wealthy landowners having significant land holding are more likely to prefer monetary options, while those with marginal land holding are more likely to prefer land-based and employment-based options. Moreover, preference for compensation differs among scenarios of complete and partial land acquisition.

The remaining paper is organized as follows: Section 2 gives a brief overview of the current scenario of the land acquisition and associated R&R in India. Section 3 reviews the literature on *institutional fit* that provides the framework for understanding institutional design and actors' participation. In Section 4, the empirical exercise of contingent ranking experiment is described. Section 5 interprets the results and discusses how landowners' preferences play a role in effective institutional design. Section 6 concludes with policy insights and scope of future research.

2. Land Acquisition, and Associated Rehabilitation and Resettlement in India

Since independence in 1947, roughly 60 million people have been displaced in India due to development projects out of which 40 per cent are tribal (W. Fernandes, 2007; Walter Fernandes & Asif, 1997). Irrigation projects alone account for approximately 60 per cent of the total land acquired and people displaced (Shah, 2010). As of now, there are more than 5000 large dams which have been built or are being built in India.[1]

Unlike in the developed world, acquisition of land in India requires displacement of a large mass of population. This is because land holding is highly fragmented. Moreover, the farming sector being very labor intensive employs landless labor who are dependent on this land for their livelihood. Yet, until

[1] Central Water Commission, Annual Report (2013-14), http://www.cwc.gov.in/main/downloads/Annual Report 0402 2013-14.pdf accessed in July 2016.

recently there was no clear institutional framework for R&R in India[2] (Mathur, 2006a). Land Acquisition Act (LAA), 1894 (including amendments) was the general law for land acquisition as well as R&R. The provisions of the LAA (1894) focused more on the acquisition process with little emphasis on R&R (Ramesh & Khan, 2015). Lack of attention to R&R resulted not only in poor rehabilitation (Mathur, 2006a) but also created conflicts between the state and the citizens (Ministry of Rural Asif, 1999; Desai, 2011; Development, 1996; Iyer, 2007).

As a result, many development projects across India faced resistance movements (Nayak, 2010; Ray, 2010). International donor agencies imposed strict guidelines for effective rehabilitation in return for continued funding. Eventually this prompted the Indian government's Ministry of Rural Development (MoRD), to begin a policy drafting process in the early 1990s so that land acquisition for vital development projects and stakeholder interests could be balanced (Ramesh & Khan, 2015). After several iterations and modifications[3], the Indian government enacted "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement (RFCTLARR) Act, 2013". This was opposed by several state governments and Industries Associations as it was felt that the landowners' consent requirements was very stringent and would make it nearly impossible to acquire land for any purpose (Raghuram & Sunny, 2015). Consequently, a new government in 2014 attempted to accommodate these concerns but it failed due to strong political opposition. As of today, RFCTLARR Act 2013 remains the framework under which land is acquired with the following major provisions: monetary compensation that amounts to multiple times the market value of the land[4], income security options[5], and

[2] The rehabilitation was under the provisions of archaic Land Acquisition Act (LAA) 1894 or project specific provisions laid by donor agencies or state governments. For details about LAA 1894, kindly refer Patil (2015).

[3] The Indian government first promulgated the National Policy on Resettlement and Rehabilitation (NPRR) for project-displaced families in 2004 (GoI 2004), which was amended and revised as National Rehabilitation and Resettlement Policy (NRRP) in 2007 (GoI 2007b). By integrating the LAA, 1894 and the NRRP, 2007, the GoI drafted a bill called "the Land Acquisition, Rehabilitation and Resettlement (LARR) Bill, 2011". This revised bill further went through several iterations of modifications because of the criticisms it received from the experts and change in the government and renamed as "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement (RFCTLARR) Act, 2013" (Ramesh & Khan, 2015)

[4] Final compensation award consists of one-time the market value of land in urban areas and two-times the market value in rural areas plus value of assets attached to land or building plus solatium of one hundred per cent of the market value. As against this, final compensation award in the LAA 1894 consists of the market value plus 30 per cent of this value (as solatium) plus 12 per cent as the market value premium (Government of Government of India, 2013)

[5] Either a job in the project area to one member of the displaced family wherever possible or one-time payment of Rs.500,000 or annuity of not less than Rs.2000 for 20 years (*ibid*.). Exchange rate of Indian rupees is Rs. 67 for $1.

a provision of minimum land-for-land compensation.[6] The land-for-land provision is especially directed to those who may become landless post-displacement and to those belonging to the scheduled castes and tribes[7]. In this backdrop, we assess how R&R fits with landowners' preferences using the concept of institutional fit.

3. Preferences as Indicator of Institutional Acceptance

3.1. Why Institutional Fit?

The concept of *fit* points out that the context of a problem needs to be matched for the effectiveness of an institutional arrangement (Folke, Pritchard, Berkes, Colding, & Svedin, 2007; Ostrom, 2007; Young, 2008). The effectiveness of a treatment that is problem-specific is greater than when a one-size-fits-all approach is adopted. Different resource problems (or similar resource problems with different causes) should be treated differently (Cox, 2012). There is sufficient literature which has validated theoretically and empirically the importance of *institutional fit* in addressing the problem of governing socio-ecological systems (SES) (DeCaro & Stokes, 2013; Ekstrom & Young, 2009; Vatn & Vedeld, 2012; Zikos & Roggero, 2013).

Haller, Fokou, Mbeyale, and Meroka (2013) describe *fit* as the local actors' capacity to design institutions and to cope with problems in a particular context. Through cases of changing political economy in pre- and post-colonial Africa, they describe the co-evolutionary process of fit and misfit. They show the role of important features like flexibility, leadership, and mutual economic benefit as driving factors to attain fit.

Fit has an attribute of multidimensionality. Herrfahrdt-Pähle (2010) through analysis of river basin management institutions in South Africa, expands the dimensions of fit into those that deal with the spatial, functional and the dynamic aspects. Spatial fit concerns itself with the problems of boundaries, stakeholder participation, and financial viability. Moss (2012) further explores spatial fit in the context of European Union (EU) Water Framework Directive, paying special attention to the political dimension. Nielsen, Frederiksen, Saarikoski, Rytkönen, and Pedersen (2013), in their comparative analysis of water management in six countries around the Baltic Sea find that a predominantly top-down approach to

[6] At least 1-2.5 acres of land in the project benefitted area in case of irrigation projects (ibid.)

[7] The Scheduled Castes (SCs) and Scheduled Tribes (STs) are official designations assigned to communities that are historically disadvantaged and backward in social, educational and economic aspects in India (GoI 2015).

policy-making exists with hardly any local influence. Mann and Absher (2014) identify power structures, values, and interests of the concerned actors as crucial for making institutions fit the context.

In an important extension, DeCaro and Stokes (2013) analyze fit from a behavioral perspective, introducing the concept of "social fit". In other words, how well do different rules and decision making procedures match with human expectations and behavioral patterns? Using the principles of human agency and social psychology, they develop a framework that proposes *institutional acceptance* as an indicator of social fit. On similar lines, Hiedanpää (2013) evaluates failure of institutional arrangements to improve wolf protection in south-western Finland and the role of habit breaking and habit taking.

The multidimensional diversity of communities within and across regions bring further complexity to blueprints. Lejano and Shankar (2013) evaluate match between text (formal institutional arrangements) and context (particular place and communities) using a case of microfinance in India – arguing for the contextual fit of policy design. Table 1 provides an overview of the different dimensions of *institutional fit* and lists some representative applications.

[(Table 1: Key concepts of institutional fit) about here]

3.2. Institutional Acceptance as an Indicator of Fit

Infrastructure development projects are predominantly state driven and the associated institutional arrangements are top-down. This risks a presumption that monetary compensation is sufficient for rehabilitation. When interest groups among the displaced population are not strong, this presumption can go uncontested. However, according to DeCaro and Stokes (2013) whether an institution is fit can be measured only by its acceptance, which is defined as "the extent to which individuals endorse a set of rights, rules, or decision making procedures" (*ibid*., p.5). Since landowners are diverse in terms of wealth, education and social capital (Patil et al., 2016) there may be variations in their endorsement behavior that are difficult to capture. Nonetheless, an attempt to do so is a progress towards achieving better fit. This attempt to understand farmers' endorsement behavior is made through contingent experiment, which along with the survey design is explained in the next section.

4. Empirical Approach

4.1. Contingent Ranking Experiment

We conduct choice experiments where participants are asked to rank a discrete set of compensation options in a descending order of preference. This method has been widely applied in ecological

economics and the study of socio-ecological systems (Bateman, Cole, Georgiou, & Hadley, 2006; Beggs, Cardell, & Hausman, 1981; Foster & Mourato, 2000; Garrod & Willis, 1997; González, Johnson, & Qaim, 2009; Hanley, Mourato, & Wright, 2001; Kockelman, Podgorski, Bina, & Gadda, 2012; Veettil, Kjosavik, & Ashok, 2013). Some scholars consider this more informative than merely asking respondents to tell what is their preferred option (Fok, Paap, & Van Dijk, 2012; Long & Freese, 2014).

[(Table 2: Compensation attributes and their levels in contingent ranking experiment) about here]

The first step in this experimental design is to figure out the choice sets that comprise attributes relevant to the context. This is done based on the literature and the past R&R cases. Some modifications were made after focused group discussions and pilot survey in the study area. The two important attributes we identify are: compensation for land acquisition and compensation for house acquisition (Table 2). For land acquisition, three compensation levels are set: cash only (MONEY), land-for-land (LANDFORLAND) and self-employment training (SELFEMPLY). For house acquisition, two compensation levels are set: site for constructing new house (SITE) and constructed house in the relocation area (HOUSE).

In total, this gives six alternative options (Table 3). The first option (COMP_PACKAGE_1) is the *status quo* package that is currently in wide practice. During the experiments, participants are asked to rank these unordered options on the scale of 1 to 6 with 1 being the most preferred and 6 being the least.

[(Table 3: Illustrative contingent ranking question) about here]

A rank-ordered logit model is used to estimate farmers' preferences. Relevant respondent-specific variables influencing landowners' preferences are used as interaction terms in the model (Table 4). The quantum of land owned (*LAND_HOLDING*) is an indicator of their asset related wealth and can potentially influence decision making (Ali & Kumar, 2011; Öhlmér, Olson, & Brehmer, 1998). It is expected that those with large land holdings will prefer cash based options since there are higher revenue earning possibilities, which can be reinvested in high return investments, such as property in urban centers. As age of the respondent (*AGE*) increases, land based compensation packages could be more attractive as older people are less likely to move to an alternative employment (Deressa, Hassan, Ringler, Alemu, & Yesuf, 2009; Mahapatra & Mitchell, 2001; Zbinden & Lee, 2005).

Ranking could also be influenced by the number of family members (*FAMILY*) (Deressa et al., 2009; Zbinden & Lee, 2005) as large households could opt for employment based options. The nature of primary occupation matters (*OCCUPATION*) as non-farming landowners are less likely to opt for land

based compensation (*ibid.*). In addition to these variables, gender (*SEX*), education level (*EDUCATION*) and male headcount in the household (MALE_HH) could also play a role in the decision (Deressa et al., 2009; Mahapatra & Mitchell, 2001; Zbinden & Lee, 2005). Description of these respondent-specific variables and their expected influence on farmer's choice are provided in Table 4.

[(Table 4: Description of respondent-specific variables) about here]

Based on field-based observations, focused group discussions, and pilot survey, we found out that many landowners are only partly affected as only a portion of their total land endowment being submerged. Such landowners often invested a significant share of their compensation in intensifying and improving their remaining land, either by way of expanding irrigation access, or enhancing fertility by putting a layer of fine black soil from the submerged land, or buying farm machines, or improving infrastructure such as farm bunds and ponds or a combination of these. To gain a more disaggregated view of the preferences, we conducted the ranking exercise under both the scenarios of complete and partial submergence.

4.2. Hypothesis and Model Specification

We begin with the premise that given the options, monetary based compensation would not be the most preferred. We test this hypothesis by estimating a rank-ordered logit model (ROLM), where dependent variable is the ordinal rankings of the compensation options. Rank 1 is assigned to the most preferred option and subsequent rankings represent preferences in descending order. The *status quo* option (*COMP_PACKAGE_1*) is considered as the base category against which all other options are compared.

ROLM has several advantages which is why we consider it an appropriate tool to analyze our rank-ordered data. First, it takes care of tied ranks and the unranked options (Fok et al., 2012; Long & Freese, 2014). Second, it can also take respondent-specific explanatory variables, option-specific explanatory variables or a combination of both (*ibid.*). The rankings are assumed to be sequential and probabilities of second and subsequent rankings are conditional on the previous rankings. Let us consider that there are *n* options, which a respondent *i* ranks them in a sequence. Let $y_r = n$, which indicates that option *n* is given rank *r* (r^{th} preference). This implies that y_r can take on integer values from 1 to n, where 1 is the most preferred and n is the least preferred. Here, it is assumed that respondent *i* has a certain utility U_{in} for each option n. A model for such data takes the form:

$$\boldsymbol{U_{in} = V_{in} + \epsilon_{in}} \qquad (\mathbf{1})$$

Here, $\boldsymbol{\epsilon_{in}}$is a random component, and $\boldsymbol{V_{in}}$ is a systematic component that is specified as linear in parameters:

$$\boldsymbol{V(q_{in}, s_i) = \beta_0 q_{in} + \beta_1 s_i} \qquad (\mathbf{2})$$

Where, $\boldsymbol{q_{in}}$ is the compensation attribute of option n; and $\boldsymbol{s_i}$ is respondent *i*'s vector of demographic attributes.

Then the probability of the first choice made by the respondent *i* is $\boldsymbol{P_i(y_1 = n_1 | X)}$. The probability of the second choice is conditional on the first choice.[8] Hence, the probability of the second choice made by the respondent *i* is $\boldsymbol{P_i(y_2 = n_2 | X, y_1 = n_1)}$. Similarly, the probability of the third choice is given as $\boldsymbol{P_i(y_3 = n_3 | X, y_1 = n_1, y_2 = n_2)}$. The complete data provide a full set of rankings among the *n* options. The probability model based on this data generates the probability of the complete ordering,

$$\boldsymbol{P_i(U_{i1} > U_{i2} > U_{i3} \ldots\ldots > U_{iN}) = \prod_{n=1}^{N} \left[\frac{\exp(V_{in})}{\sum_{k=n}^{N} \exp(V_{ik})} \right]} \qquad (\mathbf{3})$$

4.3. Data

The primary participant specific information of the landowners was collected through face-to-face interviews over a period of four months in the year 2012-13. Field work was conducted in the Southern Indian state of Karnataka, where Upper Krishna Project (UKP) is currently being implemented. UKP is selected for the study mainly because in its final stage the Government of Karnataka is going to acquire farmers' land and displace 22 villages affecting several thousand people. The current status of the project provides us a real context to conduct the exercise.

[(Figure 1: Geographical location of Upper Krishna Project and sampled villages) about here]

UKP is a multipurpose project aimed at providing irrigation to 833,600 hectares of rain-fed land in four drought prone districts of Karnataka and generate 672 million units of electricity annually. Besides it would provide drinking water to villages (Krishna Water Disputes Tribunal2010). Although UKP aims to provide large scale regional irrigation benefiting the command area,[9] it has a huge impact in the

[8] If $y_1 = n_1$, then $y_2 \neq n_1$.

[9] "Command Area" means an area irrigated or capable of being irrigated either by gravitational flow or by lift irrigation or by any other method, under an irrigation system, project or source and includes every such area whether it is called "ayacut" or by any other local name in any law in force in the State (Government of India2007a)

catchment area.[10] The first two stages of the project have been completed, which has so far led to displacement of nearly four million people from 179 villages. Upon completion of its final stage, a further population of 87,576 will be displaced.

Figure 1 shows the catchment area of UKP, which is located in the Bagalkot district of Karnataka. This location receives average annual rainfall of 581 millimetres (mm) as against the state's average rainfall of 1155 mm (GoK, 2014). The majority of the population (70%) is dependent on agriculture and allied activities (GoKCensus, 2011; 2006) and the literacy rate is 54.5 per cent as against the district's literacy of 57 per cent (Census, 2011). The district's per-capita income is Rs.21,980 as against the state's average of Rs.29,729 (Shiddalingaswami & Raghavendra, 2010). In general, the location is characterised as a dry region with low per-capita income and high dependence on agriculture.

[(Figure 2: Samples of visual aids representing the compensation options) about here]

The corresponding author along with three enumerators, conducted experiments in four different villages with 50 randomly selected landowners in each village. The enumerators were specially trained and pilot survey was conducted before starting the actual experiments. Pilot survey, involving 10 respondents in nearby villages, was undertaken to check the plausibility of the experimental design. Some changes that include simplified questions, visual representations, and rearrangement of questions for clear understanding, were incorporated into the final contingent ranking experiment.

To make it convenient for both enumerators and respondents during the interview, the questionnaires[11] were developed in both English and Kannada[12]. The context was explained to enumerators in detail so as to minimize enumerator biases. All the participants were aware of the *status quo* compensation option. It was also clarified that their participation in the experiment will not alter the real life compensation. Moreover, details of all the compensation options, their attributes, the experimental setting and its purpose were explained to the participants so as to minimize the "protest bias". In order to visualize the options and make them easily comprehensible, visual aids in the form of color pictures representing the different attributes were used. Two samples of the visual aids are shown in Figure 2.

[10] A catchment is an area of land that collects water, which drains to the lowest point in the area, which could be a lake, a dam, or the sea. Rain falling on the land will make its way to this lowest point, via creeks, rivers and storm water systems (United Nations Environment Programme, Water Supply & Sanitation Collaborative Council, & World Health Organization, 1997; World Health Organization, 2016).

[11] Questionnaire is available from authors on request.

[12] Kannada is the native language of the state of Karnataka.

[(Table 5: Frequencies of participants' rankings of compensation packages) about here]

Before ranking the options, each of the six visual aids representing each option were presented and explained in a randomized order so as to avoid *order* bias. Then the participant was allowed to rank the options as per his preference by displaying all the six visual aids. After the respondent selected an option as his most preferred among the six, the visual aid representing that option was removed from the set. Thereafter, the participant was asked to select the most preferred among the remaining options. This procedure was repeated until all the options were exhausted and received a rank. During the exercise, participants were able to rank the options independently and without any peer influence. Each participant ranked the set of six options twice (land under complete and partial acquisition scenarios). To see whether extent of land acquisition affects the preference, a dummy was created for the land acquisition scenarios variable (LAND_ACQ; = 0 if land is acquired completely; and = 1 if it is acquired partially). Since each rank represents one observation, every participant generates 12 observations (6x2). Thus, a total of 2400 observations were generated. The frequency of ranking of the options and their weights are given in Table *5*. Majority of the participants ranked COMP_PACKAGE_6 as their most preferred option and COMP_PACKAGE_3 as the least preferred.

5. Results and Discussion

5.1. Results

Table 6 reports the results of ROLM model variations[13] across the two scenarios of complete land acquisition (CLA) and partial land acquisition (PLA). In models 1 and 2, we test the effect of all possible variables on the decision. Number of males in the household (*MALE_HH*), yield no significant effect on the preferences as it includes all the members including male children, who may not be decision makers and household head could be the main decision maker. Models 3 and 4 are tested without *MALE_HH* and results are found to be consistent. Thus, we interpret and discuss results for Models 3 and 4.

Under CLA, *COMP_PACKAGE_3*, *COMP_PACKAGE_4*, and *COMP_PACKAGE_6* are significant. *LAND_HOLDING* is significant as an influence in the selection of *COMP_PACKAGE_5* and *COMP_PACKAGE_6* vis-a-vis *COMP_PACKAGE_1*. *EDUCATION* significantly influences selection of *COMP_PACKAGE_4*, *COMP_PACKAGE_5*, and *COMP_PACKAGE_6.*

[13] First, we tried ROLM by including the total number of households (FAMILY) along with all other variables. The effect of this variable was not significant and thus, dropped from the models.

Under PLA, *COMP_PACKAGE_3*, *COMP_PACKAGE_5*, and *COMP_PACKAGE_6* are significant. *LAND_HOLDING* significantly influences choice of *COMP_PACKAGE_4*, *COMP_PACKAGE_5*, and *COMP_PACKAGE_6* over *COMP_PACKAGE_1*. *EDUCATION* influences choice of *COMP_PACKAGE_5*, and *COMP_PACKAGE_6*.[14]

[(Table 6: Estimation results of rank-ordered logit models) about here]

Unlike in linear regression models, the coefficients in ROLM results cannot be interpreted directly; they need to be transformed (exponentiated) and interpreted as odds ratios. This transformation, is done through the formula ($= 100\{exp(coeff.value) - 1\}$). The transformed coefficient value - in case of continuous variables - explains percentage change in the odds of ranking particular option above the base-category for a unit change in an explanatory variable, keeping other variables constant. Whereas, in case of categorical variables, the transformed coefficient value explains percentage change in the odds of ranking a particular option over the base-category for a variable changing from base category to other category, all else being equal. Table 7 gives the transformed coefficients of explanatory variables.

[(Table 7: Exponentiated coefficients of ROLMs) about here]

Under CLA, an increase in land holding by one acre decreases the odds of ranking *COMP_PACKAGE_5* and *COMP_PACKAGE_6* over the base-category (*COMP_PACKAGE_1*) by 4% and 6% respectively. As education level increases, the odds of ranking *COMP_PACKAGE_4* over *COMP_PACKAGE_1* increases by 6%, whereas, the odds of ranking *COMP_PACKAGE_5* and *COMP_PACKAGE_6* above *COMP_PACKAGE_1* decreases by 5%. Under PLA, a unit increase in land holding decreases the odds of ranking *COMP_PACKAGE_4*, *COMP_PACKAGE_5* and *COMP_PACKAGE_6* above *COMP_PACKAGE_1* by 3.5%, 5% and 7% respectively. An increase in the education level decreases the odds of ranking *COMP_PACKAGE_5* and *COMP_PACKAGE_6* above *COMP_PACKAGE_1* by 5%. In general, higher *LAND_HOLDING* and *EDUCATION* increase the likelihood of a higher ranking for monetary based compensation options.

5.2. Discussion

Acceptance of institutions indicate how *fit* they are. In the context of land acquisition, we argue that it is reflected in the matching of landowners' preferences with *status quo* R&R provisions. Our results indicate, both under CLA and PLA conditions, that compensation options that include land and

[14] *SEX* and *OCCUPATION* - were dropped from the analysis as females and non-agriculture comprised less than 5 percent of the observations in the sample.

employment are significantly preferred over monetary compensation. Landowners with relatively less land holding and lower education are more likely to prefer land-based and employment-based options. This is possibly because smaller land holding and lesser education usually imply a lack of information about land transactions, weaker networks, and a constrained ability either to repurchase land or to regenerate income through other means. However, those with larger land holding and higher education are more likely to prefer monetary based compensation options. Under CLA, education positively influences the selection of land-based options over the monetary compensation. The awareness owing to education levels that land repurchase in the same region could turn out to be very difficult explains such behavior. Hence, securing a minimum quota of land becomes vital.

As has been shown, landowners' preferences differ depending on their socio-economic features and contextual conditions of land acquisition. Respondents having better socio-economic conditions prefer cash-based R&R provisions while those that are marginal and small-holders, prefer land and employment options. Since a significant share of rural population in displacement areas in India (similar to the UKP) are small land-holders, our conclusion is that the current R&R provisions which is highly dominated by the cash component, does not fulfill the criteria of institutional fitness.

6. Conclusion

In the developing world, rehabilitation and resettlement (R&R) due to land acquisition for public purpose is highly contested and in most cases ineffective in restoring standard of living of the affected landowners. Although there has been extensive research diagnosing the causes, primarily they revolve around the efficacy of monetary mechanisms. The *institutional fit* aspect of R&R has not received the attention it deserves. Ignoring this aspect poses the risk of losing out on relevant knowledge about preferences of those who have the highest stakes. In the face of high political and sociological sensitivity of land acquisition, such an omission can be costly. This is well reflected in the current stasis as far as introduction of new land acquisition framework in India is concerned.

An intense policy debate on land acquisition has been taking place in India. A prime contention is the clause, which specifies that at least 70-80 per cent of landowners have to give consent before an acquisition can take place. However, mere majority consent could be ineffective if it fails to account for the local conditions and expectations. This study provides primary evidence that landowners' expectations from R&R significantly differ from the *status quo* monetary provisions.

We performed a contingent ranking experiment with 200 'about-to-be-displaced' landowners in UKP, Karnataka, India. Participants were asked to rank a set of six alternative compensation options in

descending order of preference. The choice for different R&R mechanisms is estimated using ROLM. We found that land holding and education of the landowners influence their preferences for different compensation options. Moreover, their preferences differ under the scenarios of complete and partial land acquisition. Wealthy landowners having high land holding are more likely to prefer monetary compensation packages while those with lower land holding are more likely to prefer land-based and employment-based compensation packages. These differences in preferences among landowners with varied endowments show that the contemporary institutions of R&R create inequity in distribution of rehabilitation benefits.

The evidence we generate adds to the current debate about R&R in developing countries that a blanket policy which ignores complexities that govern day to day rural life may not be successful. For institutions to be effective, they have to *fit* the local conditions under which policy implementation has to take place. By arguing that the current framework of compensation has low *institutional fit*, we push for reforms in land acquisition laws so that landowners' preferences are better integrated. Some of the local conditions to be taken into account are the proportion of an owner's land to be acquired, the education and wealth status, employment opportunities available in displaced area, the purpose of land acquisition and non-monetary benefits offered by the particular project. A better institutional fit assures better inter-temporal allocation and may help in preventing further marginalization of the displaced population. The study made a novel attempt in scientific enquiry into the issues related to rehabilitation and resettlement from the perspective of institutional fit. It has contributed to the growing body of literature that could create further debates around this line of thought. However, further extensive research in this line will help bring actionable policy insights for designing or modifying institutions that minimize post-displacement marginalization of farmers.

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TABLES

Table 1: Key concepts of institutional fit

Sl. No.	Concept	Key features	Important papers	Country and Setting
1	Social Fit	How well different rules and decision making procedures match with human expectations and local behavioral patterns	DeCaro and Stokes (2013)	-
2	Contextual Fit	How well different rules match with local conditions	Lejano and Shankar (2013)	India: improvised microfinance programs
3	Dynamic Fit	Ability to adapt to ecosystem dynamics – Climate change, etc.	Herrfahrdt-Pähle(2010)	South Africa: Water governance
4	Functional Fit	How well resource use mechanisms or institutional attributes match with ecosystem functionality, i.e., the ecosystem properties or functions addressed through them.	1. Ekstrom and Young (2009) 2. Cumming, Cumming, and Redman (2006)	1. United States: Ocean and coastal laws and regulations 2. Africa and United States: Land tenure and food production
5	Spatial Fit	How well resource management institutions match with the bio-geophysical properties of the resource they seek to manage	Young (2002)	-

Notes: "-" implies that the papers are conceptual and do not have case studies.
Source: Own compilation

Table 2: Compensation attributes and their levels in contingent ranking experiment

Attribute	Levels
Land acquisition	1. Cash compensation (on per acre basis) (MONEY) 2. Land-for-land subject to a ceiling of two acres + cash for the remaining land (LANDFORLAND) 3. Self-employment training +part cash (SELFEMPLY)
House acquisition	1. Site + cash based on evaluation of the house to be acquired (SITE) 2. Constructed house based on the size of house to be acquired (HOUSE)

Table 3: Illustrative contingent ranking question

Options	Compensation packages	Ranking
1	MONEY + SITE (*COMP_PACKAGE_1*)	☐
2	MONEY + HOUSE (*COMP_PACKAGE_2*)	☐
3	LAND + SITE (*COMP_PACKAGE_3*)	☐
4	LAND + HOUSE (*COMP_PACKAGE_4*)	☐
5	SELF-EMPLOYMENT + SITE (*COMP_PACKAGE_5*)	☐
6	SELF-EMPLOYMENT + HOUSE (*COMP_PACKAGE_6*)	☐

Table 4: Description of respondent-specific variables

S. No.	Variable name	Description	Mean	Expected Influence
1	LAND_HOLDING	Respondent's land holding (acres)	8.00	+ on cash based CP
2	AGE	Age of the respondent	52.72	+ on land based CP
3	FAMILY	Members in a household	8.13	+/- on cash based CP
4	OCCUPATION	Main occupation of the respondent; =1 if agriculture and 0 otherwise	0.96	If 1, + on land based CP
5	SEX	Gender of the respondent; 1 if male and 0 if female	0.96	+/- on all the CPs
6	EDUCATION	Years of education of the respondent	4.94	+ on cash based CP
7	MALE_HH	Number of males in the household	4.16	+ on cash based CP

Note: CP is compensation package

Table 5: Frequencies of participants' rankings of compensation packages

Ranking option	Ranking								
	0	**1**	**2**	**3**	**4**	**5**	**6**	**Total**	**Total with Weights[#]**
COMP_PACKAGE_1	6	66	36	49	194	24	25	400	209
COMP_PACKAGE_2	10	36	60	144	57	48	45	400	207
COMP_PACKAGE_3	10	19	87	45	52	70	117	400	162
COMP_PACKAGE_4	12	54	45	79	34	99	77	400	179
COMP_PACKAGE_5	12	46	115	49	25	70	83	400	200
COMP_PACKAGE_6	12	173	45	22	28	77	43	400	253
Total	**62**	**394**	**388**	**388**	**390**	**388**	**390**	**2400**	

Notes: Column '0' indicates the unranked compensation options by the respondents; 1 represents the most preferred compensation package and subsequent rankings represent preferences in descending order (6, the least preferred); # - Weights are given to compensation packages – most preferred with weight 1, 0.8 for 2nd most preferred, 0.6 for 3rd most preferred,…., and 0.1 for least preferred compensation package.

Table 6: Estimation results of rank-ordered logit models

Variables	(1 = CLA) PREF_RANK	(2 = PLA) PREF_RANK	(3 = CLA) PREF_RANK	(4 = PLA) PREF_RANK
COMP_PACKAGE_2	-0.115	0.0965	-0.0996	0.0825
	(0.267)	(0.284)	(0.221)	(0.233)
COMP_PACKAGE_3	-0.758***	-0.353	-0.783***	-0.507**
	(0.287)	(0.303)	(0.236)	(0.243)
COMP_PACKAGE_4	-0.590**	-0.137	-0.679***	-0.281
	(0.291)	(0.303)	(0.236)	(0.236)
COMP_PACKAGE_5	0.168	0.359	0.314	0.459*
	(0.297)	(0.305)	(0.243)	(0.246)
COMP_PACKAGE_6	0.716**	0.990***	0.883***	1.066***
	(0.313)	(0.309)	(0.253)	(0.256)
COMP_PACKAGE_2#LAND_HOLDING	0.00692	-0.0232	0.00733	-0.0228
	(0.0175)	(0.0191)	(0.0167)	(0.0184)
COMP_PACKAGE_3#LAND_HOLDING	-0.00679	-0.0275	-0.00657	-0.0312
	(0.0188)	(0.0198)	(0.0181)	(0.0193)
COMP_PACKAGE_4#LAND_HOLDING	-0.00460	-0.0334*	-0.00567	-0.0352*
	(0.0188)	(0.0194)	(0.0182)	(0.0192)
COMP_PACKAGE_5#LAND_HOLDING	-0.0433**	-0.0582***	-0.0398*	-0.0552***
	(0.0210)	(0.0210)	(0.0204)	(0.0206)
COMP_PACKAGE_6#LAND_HOLDING	-0.0675***	-0.0749***	-0.0645***	-0.0712***
	(0.0214)	(0.0212)	(0.0210)	(0.0205)
COMP_PACKAGE_2#EDUCATION	0.00547	-0.00409	0.00495	-0.00403
	(0.0278)	(0.0279)	(0.0276)	(0.0278)
COMP_PACKAGE_3#EDUCATION	0.0382	0.0211	0.0383	0.0243
	(0.0285)	(0.0296)	(0.0282)	(0.0294)
COMP_PACKAGE_4#EDUCATION	0.0582**	0.0271	0.0594**	0.0281
	(0.0288)	(0.0292)	(0.0286)	(0.0291)
COMP_PACKAGE_5#EDUCATION	-0.0518*	-0.0510*	-0.0542*	-0.0532*
	(0.0298)	(0.0298)	(0.0296)	(0.0297)
COMP_PACKAGE_6#EDUCATION	-0.0484	-0.0505	-0.0511*	-0.0535*
	(0.0301)	(0.0310)	(0.0298)	(0.0307)
COMP_PACKAGE_2#MALE_HH	0.00415	-0.00290		
	(0.0422)	(0.0447)		
COMP_PACKAGE_3#MALE_HH	-0.00620	-0.0411		
	(0.0441)	(0.0480)		
COMP_PACKAGE_4#MALE_HH	-0.0224	-0.0376		
	(0.0450)	(0.0491)		
COMP_PACKAGE_5#MALE_HH	0.0392	0.0270		
	(0.0460)	(0.0475)		
COMP_PACKAGE_6#MALE_HH	0.0427	0.0212		
	(0.0471)	(0.0456)		
Observations	1,200	1,200	1,200	1,200
Number of groups	200	200	200	200
Pseudo R-squared	0.0348	0.0332	0.0340	0.0320
Log lik	-1244	-1238	-1245	-1239
Chi-squared	89.71	84.89	87.55	81.83
p-value	8.32e-11	5.72e-10	0	0

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; CLA and PLA are complete and partial land submergence situations respectively.

Table 7: Exponentiated coefficients of ROLMs

Variables	CLA	PLA
COMP_PACKAGE_2	-9.48	8.60
COMP_PACKAGE_3	-54.30***	-39.77**
COMP_PACKAGE_4	-49.29***	-24.50
COMP_PACKAGE_5	36.89	58.25*
COMP_PACKAGE_6	141.81***	190.37***
COMP_PACKAGE_2#LAND_HOLDING	0.74	-2.25
COMP_PACKAGE_3#LAND_HOLDING	-0.65	-3.07
COMP_PACKAGE_4#LAND_HOLDING	-0.57	-3.46*
COMP_PACKAGE_5#LAND_HOLDING	-3.90*	-5.37***
COMP_PACKAGE_6#LAND_HOLDING	-6.25***	-6.87***
COMP_PACKAGE_2#EDUCATION	0.50	-0.40
COMP_PACKAGE_3#EDUCATION	3.90	2.46
COMP_PACKAGE_4#EDUCATION	6.12**	2.85
COMP_PACKAGE_5#EDUCATION	-5.28*	-5.18*
COMP_PACKAGE_6#EDUCATION	-4.98*	-5.21*

Notes: ***p<0.01, ** p<0.05, * p<0.1; CLA and PLA are complete and partial land acquisition situations respectively.

FIGURES

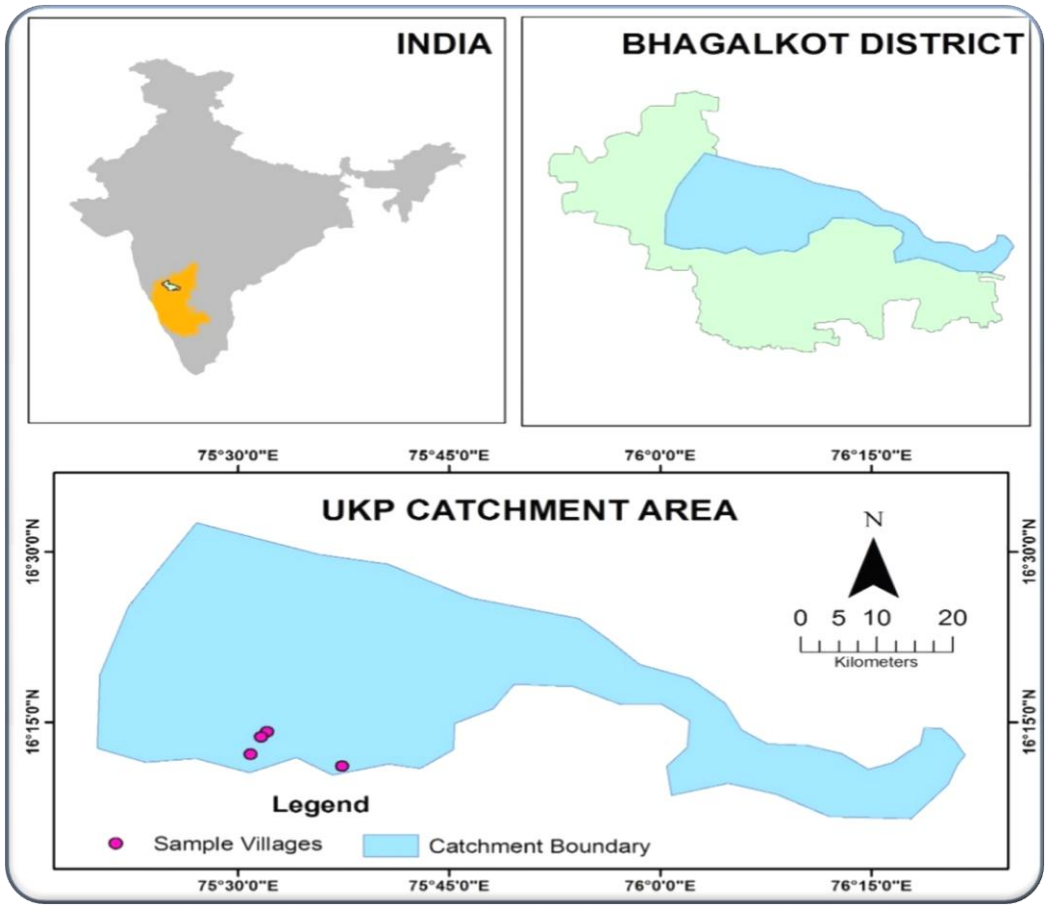

Figure 1: Geographical location of Upper Krishna Project and sampled villages
Source: Own GIS based compilation

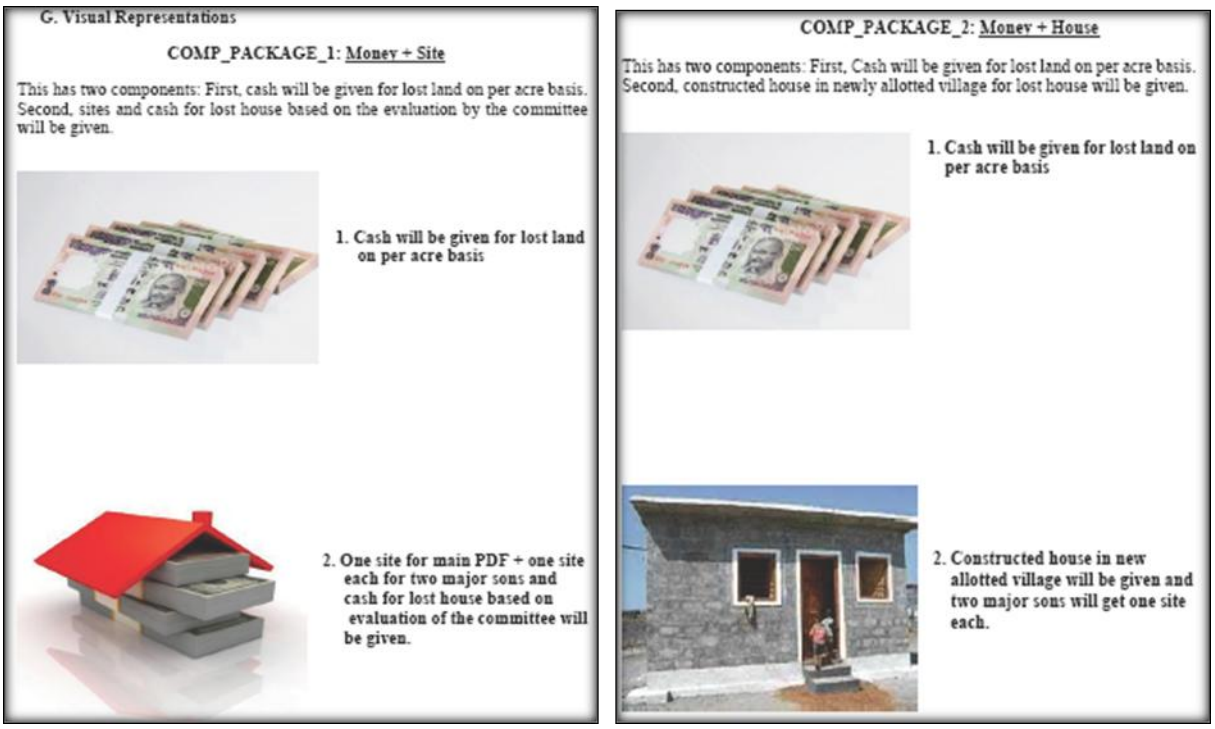

Figure 2: Samples of visual aids representing the compensation options