

## **Influence of Information Asymmetry on land value perception**

**Maya Kant Awasthi**

Professor

Indian Institute of Management, Lucknow -226013, India

### **ABSTRACT :**

Rural and Agricultural economy in India centered around agricultural land resource as it is prime source of livelihood support for village communities. For resource poor farmers such as small and marginal farmers land is a critical asset for maintaining their social, economic and food security. In fact, it is observed that local farmland market is an important driver of rural transformation (Deiniger, Savastano, Xia, 2016). As a natural consequence of this criticality of land for a farmer, land has multiple utilities. Ownership of land is symbol of their social standing, it has collateral value and serves as reserve capital assets to be used during emergencies (Awasthi 2005). Land is demanded at the macro level. At the macro level there are two important sources of land demand ie., industry and government. The industry need land for setting up industrial facilities whereas, government need land for undertaking various developmental activities such as infrastructure development and public services. On supply side, individual land owners are allowed to buy and sale land as any asset traded in the market except in case of socially vulnerable groups such as SC and ST where, land trading is allowed with certain restrictions. However, Government can acquire any amount of land for public purpose. Since public purpose is not properly defined in Indian land acquisition act, land can be acquired for any purpose government chooses to use the land for. In fact, land acquisition by the government cannot normally be challenged. Farmers whose land has been acquired are allowed to challenge only amount of compensation to be provided for their land. In a situation when buyer of land is Government, valuation of land becomes a critical issue. Therefore, for such scarce and highly valuable resource there is urgent need to evolve an effective land valuation methodology.

Usual approach of the government is to determine land price based on the recorded traded price of the base land and then add the value of other assets on the land such as a fence, house, well and tube wells or trees Recent land valuation studies indicated that under valuation of agriculture land because of non-inclusion of

value of non-tangible gains from land is very common (Morris2004; 2006; 2007). Such under valuation of land provides very strong incentive to acquire excess land by the government. A natural consequence of this is uncertainties, risks, delays related to land acquisition, protest and resistance on the part of the land owners of land (Asif1999, Morris2004; 2006; 2007). Therefore, there is no surprise that any attempt by the government to acquire land for public use attract resistance from the owner of the land. As a matter of fact, land acquisition and rehabilitation have been issues around which much political mobilization and protest against the state have taken place in India and continue to do so. Singur, Nandigram, Noida, Orissa and Goa all are very recent examples of such public resentment in land acquisition process. It also provides an interesting paradoxical situation where marginal product of labour in agriculture is reaching close to zero, and many small and marginal farmers are finding that their small land holdings has become uneconomical for cultivation. (Awasthi 2005, Shanin 1971). Present study therefore, attempts to develop a land valuation model which can capture true values of all tangible and non-tangible factors and reflective of ground realities of agricultural land market.

Study specifically aimed at following two objectives.

1. To identify factors which influences agricultural land buying and land sale decisions
2. To develop a land valuation model which can capture values of all tangible and non-tangible land value influencing factors and reflective of ground realities

## **2. METHODOLOGY :**

### **2.1. Composition of sample of respondents**

Study is based on both primary and secondary information. Stratified random sampling technique was used for collecting primary data. For sampling purpose, owners of agricultural land were categorized under large medium, small and marginal category. From these groups, a proportionate random sample of all the categories of farmers have been drawn for this study.

In the first stage of sampling process, two districts namely, Sitapur and Barabanki were purposively selected for this study. In the second stage, on the basis of concentration of land market, a random sample of 4 blocks has been drawn from the Sitapur district whereas, from the Barabanki district a sample of 3 blocks has been drawn. In third stage of sampling a random sample of 22 villages and 20 villages have been drawn from 4 blocks of Sitapur district and 3 blocks of Barabanki districts respectively. In the final stage all farmers who have bought or sold the land in last 3 years have been obtained.

## 2.2 Analytical Framework :

Information collected under the study was compiled, processed and analyzed for making appropriate inferences. Analytical framework used in this study is explained below.

Based on literature review and personal field observations an empirical model has been conceptualized for identifying of land value influencing factors. The important variables considered to be determinants of land valuation are socio-demographic factors such as age, education, no. of working members, social category, average monthly income, farming characteristics such as: land holdings, land fit to growing cash crops, crop yield, cropping intensity, and land use characteristics such as: assured irrigation facility, average distance between farmland and main road. For the study, a logit model of following form was developed.

$$\text{Logit}(P_i) = \ln [P_i / (1 - P_i)] = \alpha + \hat{\alpha}_1 \text{AGE} + \hat{\alpha}_2 \text{EDU} + \hat{\alpha}_3 \text{SOC} + \hat{\alpha}_4 \text{WKMEB} + \hat{\alpha}_5 \text{INC} + \hat{\alpha}_6 \text{LNDHOL} + \hat{\alpha}_7 \text{CASC RP} + \hat{\alpha}_8 \text{YIELD} + \hat{\alpha}_9 \text{CROPINT} + \hat{\alpha}_{10} \text{ROAD} + \hat{\alpha}_{11} \text{IRRG} + \hat{\alpha}$$

Where:

- $P_i$  – Probability of the dependent variable taking a value of 1.
- $i$  – Number of respondents (1.....N)
- $\alpha$  – Constant
- $\hat{\alpha}$  – Regression coefficient
- $\hat{\alpha}$  – Error

**Table : 1**  
**Descriptive statistics of variables used in the regression analyses**

| Code                         | Description of variables                              | Mean | SD    |
|------------------------------|-------------------------------------------------------|------|-------|
| <b>Dependent variables</b>   |                                                       |      |       |
| LANDVAL                      | Land value/rate (1 if >3.5 lack per hectare, 0-Else). | 0.27 | 0.449 |
| <b>Independent Variables</b> |                                                       |      |       |
| AGE                          | Age (1 if <35 years, Else-0)                          | 0.44 | 0.502 |
| EDU                          | Education (1 if Graduate and above, Else-0)           | 0.46 | 0.505 |
| SOC                          | Social category (1if SC/OBC-1, Else-0)                | 0.73 | 0.449 |
| WKMEB                        | No. of working members (1 if >3 members, Else-0)      | 0.56 | 0.502 |

|         |                                                              |      |       |
|---------|--------------------------------------------------------------|------|-------|
| INC     | Monthly household's income (1 if Rs.15000 per month, Else-0) | 0.39 | 0.494 |
| LNDHOL  | Land holdings                                                | 1.35 | 1.177 |
| CASCRP  | Land fit to growing cash crop (1 if yes, Else-0)             | 0.37 | 0.488 |
| YIELD   | Crop yield (1 if very high, Else-0)                          | 0.49 | 0.506 |
| CROPINT | Cropping intensity (1 if >200, Else-0)                       | 0.37 | 0.488 |
| ROAD    | Close to road (1 if yes, Else-0)                             | 0.29 | 0.461 |
| IRRG    | Assured irrigation (1 if yes, Else-0)                        | 0.12 | 0.331 |

### **3.0 RESULTS AND DISCUSSION :**

#### **3.1 Profile of the Study area**

Analysis of the study area was carried out to understand prevailing environment of farm land market and its dynamics.

##### **3.1.1 Profile of Barabanki District**

The district of Barabanki also known as the 'Entrance to Poorvanchal', is an eastern region districts in Faizabad division of the state of Uttar Pradesh. It lies between 26°32' and 27°21' N and between longitudes 80°05' and 81°51'. District is endowed with the river Ghaghra. Faizabad, Sultanpur, Raebareli, Lucknow, Sitapur, Bahraich and Gonda districts are adjoining districts of Barabanki district .

The district lies in the basin of river Ganga in the State of Uttar Pradesh. District has moderate climatic conditions. Land utilization pattern of the district Barabanki indicates that 64.2% of the total geographical area of the district is under agricultural use. Out of the total cultivated area, 65.7% area is sown more than once. District has about 166 % cropping intensity. In the district, 55.5% of the total cultivated area is under irrigation. The main crops cultivated in the districts are wheat, paddy, barley, potato, sugarcane, gram, maize, jwar, mustard and oil seeds. Proportion of crop area under rabi, kharif and jayad crops is 74.8%, 79.5% and 11.3%, respectively. As per 2001 census, the total population of the district was 26.7 Lac. The sex ratio (i.e., the number of females per thousand male) of population is abysmally low at 887. Total women literacy of the district is only 35.6%.

Review of macro data of Barabanki distric indicate that district has fairly good agricultural production environment and supporting infrastructure for agribusiness and rural enterprises. Under such environment, demand for land in rural areas is naturally

very high and land provide good foundation for a vibrant agricultural land sales and rental market in the district (Awasthi 2014).

### **3.1.2 Profile of Sitapur District**

Review of history of Sitapur district reveal that Sitapur district was established by the great king Vikarmaditya after the name of Lord Ram's wife Sita. This district is endowed with River Gomti which makes the boundary from west to south of the districts. Lucknow, Hardoi, Lakhimpur, Baraich districts makes the boundary of the district. The river Ghagra seprates district Sitapur from Bahraich district.

The district is divided into six tehsils i.e., Sitapur, Biswan, Mishrikh, Laharpur, Mahmoodabad and Sidhauri. For developmental purpose it has been further divided into 19 developmental blocks. District has a homogeneous land use pattern across the district. As per 2001 census survey, Sitapur had a total population of 3,619,661. In the population, males constitute 53% of the population and females 47%. The district has an average literacy rate of 48% (male literacy 60.1%, female literacy 35.6% ). The district had an average household size of approx 6 family members. Farming is main livelihood source in the district.

## **3.2 Profile of the Land owners**

### **4.2.1. Age profile of farmer**

A close look of age profile of farmers indicate that majority of farmers are young ie. under 25-40 years age group. Proportion of farmers under unproductive age group (> 60 years) is maximum in case of small farmers. In this category little over 28 % farmers are above 60 years age (Table 2).

**Table :2**  
**Proportion of farmers in different age groups (%)**

| Sl. No. | Category of Farmer       | <25 years | 25-40 years | 40-60 years | >60 years | Total |
|---------|--------------------------|-----------|-------------|-------------|-----------|-------|
| 1       | Marginal framers (<1 ha) | 13.5      | 40.4        | 34.8        | 11.2      | 100   |
| 2       | Small Farmers (1-2 ha)   | 12.5      | 25.0        | 34.4        | 28.1      | 100   |
| 3       | Medium Farmers (2-4 ha)  | 12.1      | 33.3        | 51.5        | 3.0       | 100   |
| 4       | Large Farmers (>4 ha)    | 0         | 50.0        | 37.5        | 12.5      | 100   |
|         | Total                    | 12.3      | 36.4        | 38.3        | 13.0      | 100   |

#### **4.2.2. Education profile of farmers**

The education profile of the farmers in the study area reveals that there is strong correlation between literacy rate and landholding size. Majority of farmers who have been to school have studied upto 8<sup>th</sup> standard only. Results of study also reveal that farmers with larger land holdings are better educated. Strong positive link between land holding size and education level can be attributed to greater awareness, high income and better access to education. The highest percentage of farmers that have at least passed intermediate and many of them pursued higher education too (Table 3).

**Table :3**  
**Education profile by landholdings (%)**

| Sl. No. | Category of Farmer | illiterate | under pri - 8 std | 9 - 10 std | 11 - 12 std | > 12 std | Total |
|---------|--------------------|------------|-------------------|------------|-------------|----------|-------|
| 1       | Marginal Farmer    | 31.5       | 53.9              | 5.6        | 2.2         | 6.7      | 100   |
| 2       | Small Farmer       | 25         | 43.8              | 9.4        | 12.5        | 9.4      | 100   |
| 3       | Medium Farmer      | 15.2       | 51.5              | 6.1        | 18.2        | 9.1      | 100   |
| 4       | Large Farmer       | 0          | 37.5              | 0          | 37.5        | 25       | 100   |
|         | Total              | 25.3       | 50.6              | 6.2        | 9.3         | 8.6      | 100   |

#### **4.2.3. Income profile of farmers**

Results presented in Table-4 suggests that majority of farmers earn total annual income below Rs. 50000. And about 25 percent farmers earn less than Rs. 10000 per year. Whereas, only about 5 percent farmers earn more than one lakh per year.

**Table : 4**  
**Income profile of farmers (Family income Rs /Year)**

| Sl. No. | Category of Farmer | <10000 | 10000- 50000 | 50001- 100000 | 100001- 500000 | >500000 | Total |
|---------|--------------------|--------|--------------|---------------|----------------|---------|-------|
| 1       | Marginal Farmer    | 38.2   | 55.1         | 3.4           | 3.4            | 0       | 100   |
| 2       | Small Farmer       | 12.5   | 75.0         | 6.3           | 6.3            | 0       | 100   |
| 3       | Medium Farmer      | 9.1    | 75.8         | 9.1           | 6.1            | 0       | 100   |
| 4       | Large Farmer       | 0      | 37.5         | 50            | 0              | 12.5    | 100   |
|         | Total              | 25.3   | 62.3         | 7.4           | 4.3            | 0.6     | 100   |

#### **4.2.4. Cropping pattern**

Study findings related to cropping pattern revealed that t Wheat, Paddy and Sugarcane based crop rotations are very popular in the study area. Whereas, large farmers prefer high cost and high value crops like peppermint in their crop mix. Study area therefore, clearly indicate preference for high value crops. Choice of high value crop results in increased level of risk in agriculture in study area.

**Table : 5**  
**Crop rotation practices used by farmers**

| Sl. No. | Crop rotation                  | Percent of farmers adopting |              |               |              |
|---------|--------------------------------|-----------------------------|--------------|---------------|--------------|
|         |                                | Marginal Farmer             | Small Farmer | Medium Farmer | Large Farmer |
| 1       | Wheat-Paddy                    | 67.7                        | 16.1         | 16.1          | 0            |
| 2       | Wheat-Mustard-Peppermint-Paddy | 29.2                        | 12.5         | 45.8          | 12.5         |
| 3       | Wheat-Peppermint-Paddy         | 40                          | 20           | 30            | 10           |
| 4       | Sugarcane                      | 35.7                        | 14.3         | 28.6          | 21.4         |
| 5       | Wheat-Masur-Paddy              | 50                          | 30           | 10            | 10           |
| 6       | Wheat-Mustard-Masur-Paddy      | 66.7                        | 33.3         | 0             | 0            |
| 7       | Arher                          | 55.6                        | 44.4         | 0             | 0            |
| 8       | Wheat-Mustard-Paddy            | 100                         | 0            | 0             | 0            |
| 9       | Others*                        | 42.9                        | 28.6         | 28.6          | 0            |

\*Wheat-Mustard-Masur, Wheat-Mustard-Masur-Peppermint-Paddy, Wheat-Paddy-Mustard-Peppermint, Gram-Wheat-Masur-Paddy, Wheat-Masur-Peppermint-Paddy, Wheat-Mustard-Peppermint-Channa, Wheat-Paddy-Gram, Wheat-Peppermint.

#### **4.3 Reasons for sale/buy decision of agricultural land**

Factor which influences land buying and selling decisions have been identified in the earlier study carried out in the Bundelkhand region of U.P. Under present study these factors have been cross verified using qualitative data collection tools such as FGD. Results of the study suggest that different categories of farmers sell their land for different reasons. Impulsive factors such as social ceremonies, gambling and addiction, family needs, loan payments, uneconomic land holdings, attractive land prices, investment needs, migration to urban centers, and problems with land supervision emerged as important reasons (Table 6). These research findings broadly confirms findings of earlier studies (Awasthi 2005, 2009).

**Table : 6**  
**Reasons for land Sales Decision under different farmers category**

| Factor                                | Total land holding by types of farmers |              |               |              |       | Percent of total respondents |
|---------------------------------------|----------------------------------------|--------------|---------------|--------------|-------|------------------------------|
|                                       | Marginal Farmer                        | Small Farmer | Medium Farmer | Large Farmer | Total |                              |
| Impulsive ( Gambling, addiction, etc) | 5                                      | 8            | 1             | 0            | 14    | 9.72                         |
| Social ceremonies                     | 24                                     | 25           | 6             | 3            | 58    | 40.28                        |
| Family need                           | 50                                     | 35           | 12            | 2            | 99    | 68.75                        |
| Loan payments                         | 40                                     | 25           | 12            | 2            | 79    | 54.86                        |
| Uneconomic land holding               | 10                                     | 13           | 7             | 2            | 32    | 22.22                        |
| Attractive price of land              | 7                                      | 9            | 1             | 0            | 17    | 11.81                        |
| Land supervision problem              | 11                                     | 2            | 3             | 0            | 16    | 11.11                        |
| Migration to urban areas              | 15                                     | 6            | 3             | 0            | 24    | 16.67                        |
| Investment needs                      | 1                                      | 2            | 0             | 0            | 3     | 2.08                         |

## REASONS FORBUYING AGRICULTURAL LAND

Results of the study suggest that farmers are essentially buying land for crop cultivation, safe investment avenue, increasing income of farmers and utilization of family work force (Table 7). These findings of the study broadly confirm findings of earlier studies (Awasthi 2005) that there is no major change in dynamics of farm land market in last few years.

**Table: 7**  
**Reasons for Buying agricultural land by different farmers**

| Factor                    | Total land holding by types of farmers |              |               |              |       | Percent of total respondents |
|---------------------------|----------------------------------------|--------------|---------------|--------------|-------|------------------------------|
|                           | Marginal Farmer                        | Small Farmer | Medium Farmer | Large Farmer | Total |                              |
| Agriculture/ Farming      | 41                                     | 33           | 14            | 1            | 89    | 61.81                        |
| Setting up small Industry | 4                                      | 8            | 1             | 0            | 13    | 9.03                         |
| Land for Housing          | 10                                     | 10           | 3             | 1            | 24    | 16.67                        |

### *Influence of Information Asymmetry on land value perception*

|                                                                                        |    |    |    |   |    |       |
|----------------------------------------------------------------------------------------|----|----|----|---|----|-------|
| Investment                                                                             | 37 | 33 | 10 | 1 | 81 | 56.25 |
| Utilization of family work force                                                       | 29 | 18 | 3  | 1 | 51 | 35.42 |
| Improve family income                                                                  | 36 | 19 | 9  | 4 | 68 | 47.22 |
| Capacity Utilization of farm machinery (Tractor, bullock-cart, Thressure Pumpset etc.) | 5  | 12 | 8  | 1 | 26 | 18.06 |

### **REGRESSION ANALYSIS :**

*Logit analysis was performed using the SPSS 15.0 to estimate prevalent odds ratios and evidence of significant relationship between dependent and independent variables. The results of the binary logistic regression using the land value as a dependent variable and independent variables of age, education, income, social category, land holdings, growing cash crops, crop yield, cropping intensity, closeness to road, and assured irrigation facility. Logit models has been interpreted using Odds and Odds ratios. The degree of impact of the independent variables is reported by effect-coefficients Exp(B) which indicate the change of the odds ratio when the independent value increases for one unit. The estimated coefficients B's are measures of the changes in odds ratio.*

Findings of the study suggest that the model is a reasonably good fit as indicated by the summary statistics. The chi-square statistic for the model is 26.42, which is significant at 1 percent level of significance ( $p < 0.01$ ) and Nagelkerke  $R^2$  (0.691) indicates an adequately goodness of fit. The estimated logit model correctly predicted 95.1% of respondent's views.

**Table : 8**  
**Binary regression results for land valuation**

| <b>Independent variables</b>          | <b>B</b> | <b>S.E.</b> | <b>Wald</b> | <b>Exp(B)</b> |
|---------------------------------------|----------|-------------|-------------|---------------|
| <i><b>Socio-demographics</b></i>      |          |             |             |               |
| Age                                   | 3.864*   | 2.084       | 3.437       | 47.647        |
| Education                             | 2.796*   | 1.694       | 2.724       | 16.379        |
| Social category                       | -3.415*  | 1.897       | 3.239       | 0.033         |
| No. of working members                | 2.108    | 1.516       | 1.933       | 8.230         |
| Monthly household income              | 3.647*   | 1.943       | 3.523       | 38.364        |
| <i><b>Farming characteristics</b></i> |          |             |             |               |
| Land holdings                         | 0.151    | 0.691       | 0.048       | 1.163         |
| Land fit to growing cash crop         | 0.771    | 1.461       | 0.279       | 2.162         |
| Crop yield                            | 3.997*   | 2.289       | 3.048       | 54.411        |
| Cropping intensity                    | 4.309**  | 2.058       | 4.383       | 74.366        |

***Land use characteristics***

|                    |         |       |       |        |
|--------------------|---------|-------|-------|--------|
| Close to road      | 4.479** | 1.930 | 5.387 | 88.113 |
| Assured irrigation | 1.848   | 2.116 | 0.763 | 6.344  |

***Model Statistics***

|                            |           |       |       |       |
|----------------------------|-----------|-------|-------|-------|
| Constant                   | -11.867   | 5.055 | 5.512 | 0.000 |
| -2 Log likelihood          | 21.265    |       |       |       |
| Cox & Snell R <sup>2</sup> | 0.475     |       |       |       |
| Nagelkerke R <sup>2</sup>  | 0.691     |       |       |       |
| Chi-Square                 | 26.423*** |       |       |       |
| Correct prediction (%)     | 95.10     |       |       |       |

Significant. level \*\*\*1% \*\*5% \*10%

Results of the study indicate that the age, income and social status has positive impact on land valuation. Other important factors which have significant impact on land value are farming characteristics such as crop yield, cropping intensity and land use characteristic such as distance of farmland and location of farm land.

## **5. SUMMARY AND CONCLUSIONS :**

Study clearly establish criticality of factors such as age, education, social category, income level, productivity of land, cropping intensity and approachability of land as significant factors which influences price of land. As these factors vary from farmer to farmer, land valuation has to be farmer specific activity. One of the important finding of this study is that same piece of land may have different value to different farmers. Area approach of deciding the land price is therefore not a very effective technique of land valuation as being practiced at present.

## **REFERENCES :**

- Asif,M(1999). Land acquisition act: Need for an alternative paradigm, *Economic and Political Weekly*, June 19, 1564-1566.
- Awasthi Maya Kant (2005). Interspatial total factor productivity analysis of alternative land lease arrangements in Bundelkhand region of UP, *Indian Journal of Agricultural Economics* , 60 (3), 422-430.
- Awasthi Maya Kant (2009). Dynamics and resource use efficiency of agricultural land sales and rental market in India: Land Use Policy, 26. 736-743
- Awasthi Maya Kant (2014). Socioeconomic determinants of farmland value in India: Land use Policy, 39. 78-83.

*Influence of Information Asymmetry on land value perception*

Basu, Kaushik (ed) (2007). *The Oxford Companion to Economics in India A-Z*, Oxford University Press, New Delhi.

Delhi-Janwadi-Adhikar-Manch (2002). 'The Assault on workers in land use policy and practice in Delhi' in Morris and Shekhar (eds).

Fernandes, W (1998): 'Land Acquisition (Amendment) Bill, 1998: Rights of Project-Affected People Ignored', *Economic and Political Weekly*, October 17-24, 2703-06.

Deininger, K., Xia, F., & Savastano, S. (2015). Small holders' land ownership and access in sub-saharan Africa: A New Landscape? The World Bank

GoI (1985). The Land Acquisition Act, 1894 Government of India. Kothari, B (2002). 'Transfer of Development Rights: An Alternative to Conventional Land Acquisition' in Morris and Shekhar (eds). Machemer, PL, J Thomas et. al. (2000). Transferable Development Rights: A Policy Brief for the Michigan Legislature, Michigan State University, December 1.

Morris, S and Rajiv Shekar (eds) (2004). *India Infrastructure Report - Governance Issues for Commercialisation*, 3inetwork, Oxford University Press, New Delhi.

Morris, S (2006). One-sided Law on Land Acquisition, *Financial Express*, June 20.

Morris, S (ed) (2001). *India Infrastructure Report 2001: Issues in Regulation and Industry Structure*, Oxford University Press, New Delhi, New York and Oxford, 2001, Chapter I, 'Overview', and Chapter 2, 'Issues in Infrastructure Today'.