Chapter-7

7.0 Research Flow

7.1 Research Gap

Government acquiring land is normally for economic and infrastructure developments. All these generally lead migration from agriculture to non-agricultural use. Traditionally when non-agricultural demand competes with the demand for agricultural use the land price goes up. Agriculture no longer remains the highest and best use. International valuation standard (IVS) demands land to be valued for highest and best use. This makes past sales transactions non-representative of the price of the acquired land. In some countries government legislation or judiciary interpretation requires computation of fair market value based on probable highest and best use of the land (as in USA). In India LARR 2013 requires average of upper 50% of sale values as fair market value to compute just compensation. But none of these approaches has any objective basis. Discussions in the previous chapter have revealed that in a free market economy "just compensation" is paid based on fair market value of the acquired land plus solatium. But fair market value itself is no longer the past sales price since the better use of the land was not there. Solatium is paid as a premium for probable better use and in some countries to compensate for the subjective value that the owner attaches with the land. Neither the alternative use nor the subjective value can be quantified objectively. This makes both the fair market value and the just compensation after adding solatium ad hoc.

As discussed in the Chapter 6, comparable sales approach is commonly used to value agricultural lands. This requires identification of attributes that differentiates the price of the plots. Land prices are historically being estimated by comparison based on their differences in attributes. Early literatures and historical evidences have identified productivity of the land and its proximity to the market as the important factor affecting agricultural land prices. With more and more plots moving from agricultural to non-agriculture use, location of the plots has assumed one of the most important attributes affecting the price. Extant literatures are available where different attributes are tested of their significance, but they are mostly case specific. Assessor bodies and also

government departments have identified critical attributes and their weightages for valuation of land. Study reveals that there are many non-land issues that affect the price like the local area affluence, population growth, non-agricultural investment in the area etc. This has not been included even in free sale. In eminent domain the impacts of such non-land factors are more significant and rapid. This has not been identified and quantified so far so that fair market value can be objectively quantified for compensation.

Modern land acquisition laws assume land as a fungible commodity, where averaging of the past land sales data provides true reflection of the market-determined price of the acquired land. But the attributes affecting land prices and their impacts vary. Unless the population size is large, straight average may give a wrong value. In India land market is thin and hence getting large sample size of comparable sales is unlikely to happen. With smaller plot sizes it becomes even more improbable of getting many comparable sales data. In the western world plot sizes are generally large. With large plot sizes there is higher probability of the presence of number of variables within a plot. This makes the price of the plots less variable and averaging may lead to statistically significant results. Further with modern location sensing devices it becomes easier to map the larger plots more accurately and averaging of their prices may be closer to "fair market value" of the acquired land. But in a thin market with fragmented land ownership the land prices vary based on their attributes. Owners expect price depending on the attributes of her land. Averaging deprives her of the reserve price. This makes "fair market value" derivation in a thin market for compensation statistically inaccurate and logically non-defensible.

Most popular method of fair market value estimation uses comparable sales approach. This requires

- The related data to be collected
- Data collected to be analyzed
- Analyzed results are to be taken for further processing using attributes for adjustment; and
- The adjusted sales price is taken for further analysis and estimation of the value of the subject property.

Sale time and comparison of site of the location of the comparable properties and the subject property are the other important characteristics for comparison (Comparable sales approach : Valuation Mehodology: Expropriation, Compensation, and Valuation: ADB Policy and International Experience- Asian Development Bank, 2007). But the method is not yet used to develop a computational basis to determine fair market value and pay compensation in India.

The research gaps may be summed up as

- *For a thin land market of India, the factors determining the average market price for computing fair market value for agricultural land have not been identified.*

- *Existing models for fair market value do not include the impacts of thin land market and also the development induced socio-economic changes.*

7.2 Research Problem

Comparable sales approach is recognized as the the most suited approach to compute fair market value of land. Large number of literary work has been done in building fair market value models with varying attributes. However, all these derivation have considered free market sales between a willing buyer and a willing seller and the land market is active. In most part of India agricultural land markets are not active; it is rather thin. In an eminent domain it is a sale between a willing buyer and an unwilling seller. In a developing country like India, eminent domain for development projects lead to rapid increase in agricultural land price in anticipation of use change. The assumption of land being a fungible good for just compensation does not hold good. Thus in the context of paying just compensation none of the conditions of fair market value derivations is satisfied.

This has led to the following research problem-

The research problem identified in the research is how to compute the fair market value of agricultural land to pay just compensation considering the development projects in the post acquisition scenario.

7.3 Research Questions

In Chapter 6 Hedonic demand theory has been identified as the most appropriate theoretical premises for developing valuation model for fair market value to pay just compensation. Hedonic demand theory needs identification of the price factors of the object for its valuation. The value of goods or services is determined by breaking down the goods into its component price factors. The factors can be the internal characteristics of the goods being sold and can also be the external factors affecting its price. The value of the good is determined from the identified components using regression analysis. Thus identification of the statistically significant price factors is taken up to build the land valuation model.

This leads to the following two research questions-

1. *Which are the factors that determine the price of agricultural land in free market sale?*

2. *What will be the suggestive model of fair market value to pay just compensation which is suitable in a thin land market scenario of India?*

7.4 Research Objective

The research makes an attempt to go beyond the simple average based comparable land sales data and to create a computational basis for land valuation which can be defended as logical for the land acquired in a thin land market. Price factors and the sales data are from the available free market sale. This needs to be tailored to meet the requirements of land valuation model which may be used to pay just compensation in eminent domain. Solatium if any can then be applied to address the concern for the subjective value.

From the above discussions, research objective is set as follows-

Objective 1

To identify factors which determine the agricultural land price in a free market sale.

Objective 2:

To build a model of fair market value computation to pay compensation in a thin land market of India.

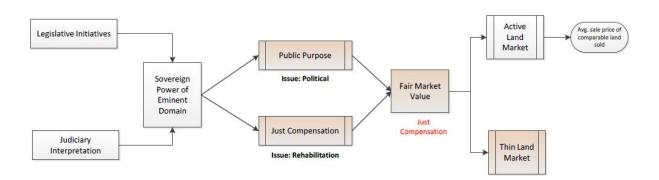Objective 1 has been further split into the following sub-objectives

a) Extant literature review to identify the variables that were considered for building land valuation models in free market sales.

b) The identification of variables which are most suited as attributes to compute fair market value in a thin market to pay compensation.

c) Extant literature review to identify the best suited factor extraction method for principal component analysis

d) To extract latent variables that may be used as factors to build land valuation model in a thin market.

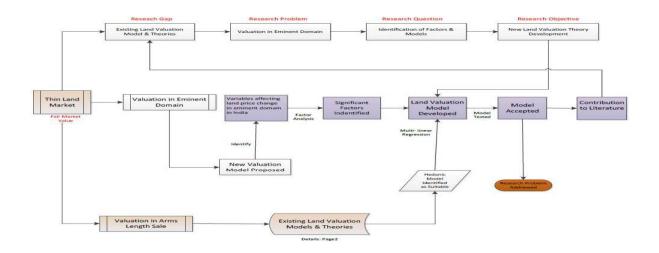e) Identify observable and measurable parameters which can objectively quantify the identified factors.

Objective 2 is split into the following sub-objectives.

a) Extant literature review to identify the most suited valuation model which may be used for land valuation in a thin land market.

b) Building land valuation model which may be used to pay just compensation in a thin land market

c) Quantitative and qualitative validation of the model to test its applicability in Indian context.
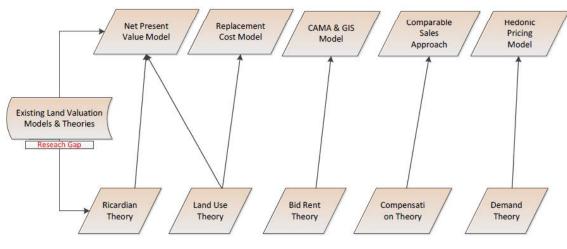
Research flow of the study to meet the objective of identification of the factors affecting agricultural land price and building a suitable land valuation model with those attributes are discussed below.

Figure 7.1- Research Flow

| Net Present Value Model | Replacement Cost Model | CAMA & GIS Model | Comparable Sales Approach | Hedonic Pricing Model |

Existing Land Valuation Models & Theories

Reseach Gap

| Ricardian Theory | Land Use Theory | Bid Rent Theory | Compensati on Theory | Demand Theory |

Valuation Theory

Symbols & Colors Used

Literature Reviewed

Concepts & Computations for Model Building

Research Contributions