

Application of Economic Theories on Land Prices: A Case of Bhubaneswar, Odisha

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Abstract

Land-use changes are most often directly linked with economic decisions as per theories on land prices. Land-rent theory is the best example of how transportation investments can affect urban form and its economic value. The value of land at different distances from the Central Business District (CBD) decreases as one move outwards, due to higher transportation costs. Therefore, accessibility is the main factor to consider from an urban resource allocation standpoint, as it links land use and transportation. The paper explores the relationships between transportation network, land use and land value. The purpose of this paper is to identify the effect of land use change toward land values in the city of Bhubaneswar. The paper starts with an overview of a limited number of land rent theories and examines the role of land in economic theory.

This paper examines the effect of distance to central business district on rental pattern land uses in Bhubaneswar. Furthermore, this paper is trying to measure the relationship of land price and distance because the land price is one of the reason for land use change and development of a new settlement.

Keywords: *Central Business District, Land rent theory, Bench mark value of land, Land Value in Bhubaneswar, Transportation network*

INTRODUCTION

Land as a factor of production is of immense importance. The economic prosperity of a country is closely linked with the land as all resource allocation takes place on land. In terms of economics, land can be viewed as scarce space for locating economic production activities, infrastructure and housing.

A piece of land situated near a Central Business District (CBD) is more convenient than one away from it. In most cities, the concentration of development is focusing on the development in the CBD area. The CBD is created as centre of activity such as business, services and government activity. This condition leads to the different land value across the city, where the land value in or near the CBD are higher than the land value in the suburban area. However in present day planning this situation may not be applicable for the whole city. There are number of questions arising for the application of urban in the city? What kind of factors that influence the value of land prices?

COMPUTATION OF LAND VALUE: OBJECTIVES

The objectives of the paper include computing the range of land value in the

study area with the effect of distance to the CBD and the application of bid-rent theory. The purpose of the study is to compare the land rent theory with the working of the land market in reality. This can be done through a case study with analysis. This approach aims to reach the process of land use change with land value by identifying the most significant variables that are affecting the land use structure through different case studies. It includes the relation of the land prices and distance to CBD in urban structure and the influence of the distance of the observation area to the central business sub district.

Methodology

The methodology has been adapted to study land rent theory and the change of land use and land value in Bhubaneswar from 2014 to 2017. This includes the formation of a database of land value in different zones from secondary information. Statistical analysis of the database has been done to obtain responses focusing on the available land price and its distance from the CBD.

Data Collection and Analysis

The land price and the distance are considered as the main variables for observation of the study. Besides, other variables like type of road and other social

and infrastructural facilities have also been considered which can influence the land price. The method used for sample collection is purposive random sampling. The data consists of land price and distance from the CBD of different mouzas selected for the study. The mouzas are located in the different zones of the city, which developed at different time periods.

ECONOMIC THEORIES ON LAND PRICES

Land has specific characteristics compared to other economic goods. Economic theories on land price have changed over time. The following theories are to a certain level are used in land use planning.

Ricardo's Theory of Rent

The attention for land in economic theories has changed over time. The theory of economic rent was first propounded by the English classical economist David Ricardo (1773-1823).

The quantity of land is limited, and so is its productiveness, and it is not uniform in quality. If the superior land will not support the population, recourse must be made to inferior lands and the produce is, thus, raised at different costs. The differential advantage of the superior land

over the inferior gives rise to Economic Rent. Thus, rent arises out of the difference existing in the productiveness of different soils under cultivation at the time for the purpose of supplying the same market, and the amount of rent is determined by the degree of those differences. According to Ricardo, rent which is paid to the landlord is a surplus enjoyed by the super marginal land over the marginal land arising due to the operation of the law of diminishing returns.

Von Thunen model

Agriculture is a fundamental economic activity that found in almost every region. Human population depends on agriculture to survive. In the early eighteenth century, North German Estate owner, Johann Heinrich von Thunen (1783-1850) designed one of the very first geographical models called Von Thunen model.

The model that is developed by Von Thunen based on the transportation cost to the market. The better location of plots with less transportation cost may enjoy a surplus of rent. In economics, Von Thünen rent theory estimates economic rent value by spatial variation or location of a resource. The assumption of Von Thunen model is that transport cost depends on the distance from the market and different

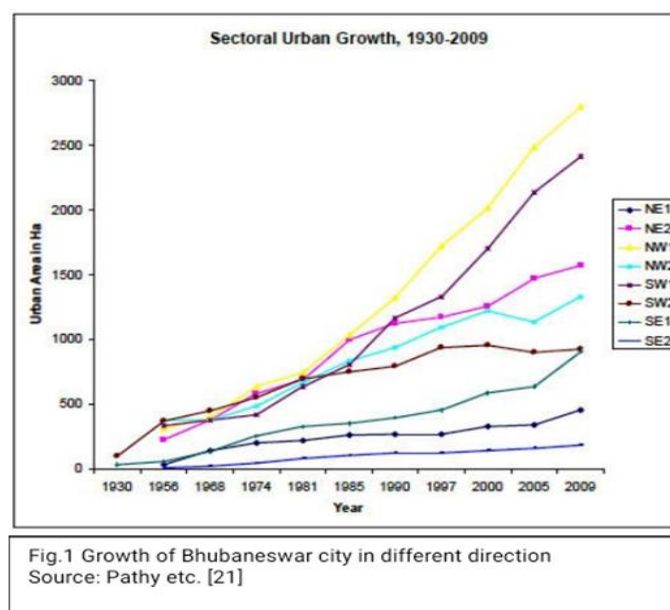
kind of products. The purpose of Thunen's exercise was to prescribe the optimum distribution of rural land uses around a market town. Thunene's application refers mostly, the land use types of agricultural land primarily and secondary land forest. Land rent varies only with distance from the centre of the region.

CURRENT APPROACHES IN LAND USE

In present day situation there are number of big and small market places in a city. New producers entered to the city in search of new job to maximize profit. Initially the numbers of producers are less and they locate away from each other to avoid competition. By the time more produces enter the city, they create different market areas and in the process

number of markets have been created in the city. The city has been developed to a crowded area and the land value in different patches of the city increases with the available facilities.

The main factors causing land use change are population growth, land value, and transportation facility. In urban areas, values of land may depend upon location factor, land use change and access to transportation system. However the transportation infrastructure is one of the key forces affecting the land use change. Therefore there is a strong linkage of location factor, land use change and access to transportation facility. The advantage of having a good connection in the high accessible area may lead to increased land value.



ANALYSIS OF PLACE VALUE AND LAND RENT IN BHUBANESWAR (BMC)

Bhubaneswar is one of the fastest growing and planned cities in India. To understand the land value from the distance from CBD, the gradient approach is adopted for a circular region of 1 km radius from the CBD, dividing the city into concentric zones. This visualizes the change of land rent at different distance from CBD.

In the analysis, the Bench Mark Value of land for 2014 to 2017 of General Administration Department, Government of Odisha has been used. In the analysis the relationship between land price and distance to CBD has been observed.

LAND VALUE IN BHUBANESWAR

The land rent theory has been applied to the city of Bhubaneswar. The Bench mark value (BMV) of land within the limit of BMC is shown in the graph. The Kharavela nagar as the CBD is located in the heart of the city and the most important part of the settlement. The area has the following characteristics: a) It has the highest land value (both commercial and residential) of the region b) It has a distinct land use pattern that can be delimited from the rest of the settlement c) It is the geographical centre of the settlement d) It

contains the settlement's main public buildings.

It has been observed that the land value decreases as the distance from the CBD increases due to less competition for land. However it is observed that the decrease of land value from the CBD is not uniform and balanced. Besides in the case of agriculture and industries, access to the city center is not especially important.

In 2014 it is observed the city is growing towards north (Patia to Raghunathpur), south-east (old town to Nathapur and Gangotri Nagar) and southwest (Khandagiri to Patrapada) direction. Most of these areas have developed later and not the part of the original master plan of the city made in 1948.

In 2014, the top five localities with the highest land rent are kharavela nagar, Jayadev vihar, Saheednagar, Nayapalli and Keshari nagar. Among the five localities kharavela nagar and Keshari nagar are located in the CBD. Although Jaydev vihar is far away from CBD the land rent is high compared to Saheed nagar and Nayapally located near the CBD. It is interesting to note that the percentage of land rent increased is not proportional from the centre of the city towards periphery. A

comparative study has been done based on the bench mark value of land for 2014 and 2017. It is observed from the study that the

residential land value increased at 20% and commercial land value increased only at 10% in kharavela nagar located in CBD.

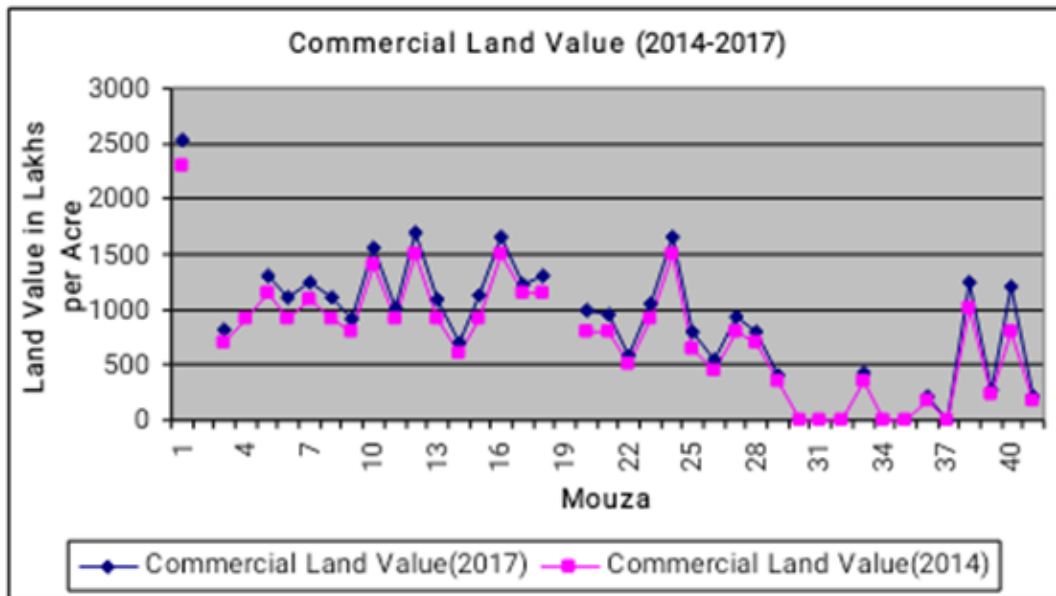


Fig.2 Fluctuation of Commercial Land Value toward Distance to City

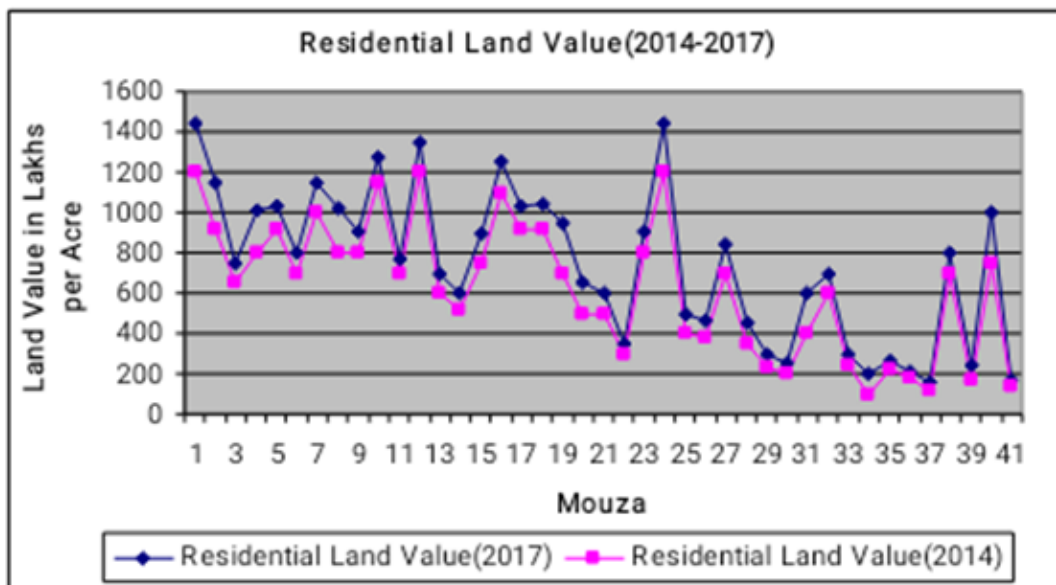


Fig.3 Fluctuation of Land Value toward Distance to City Centre

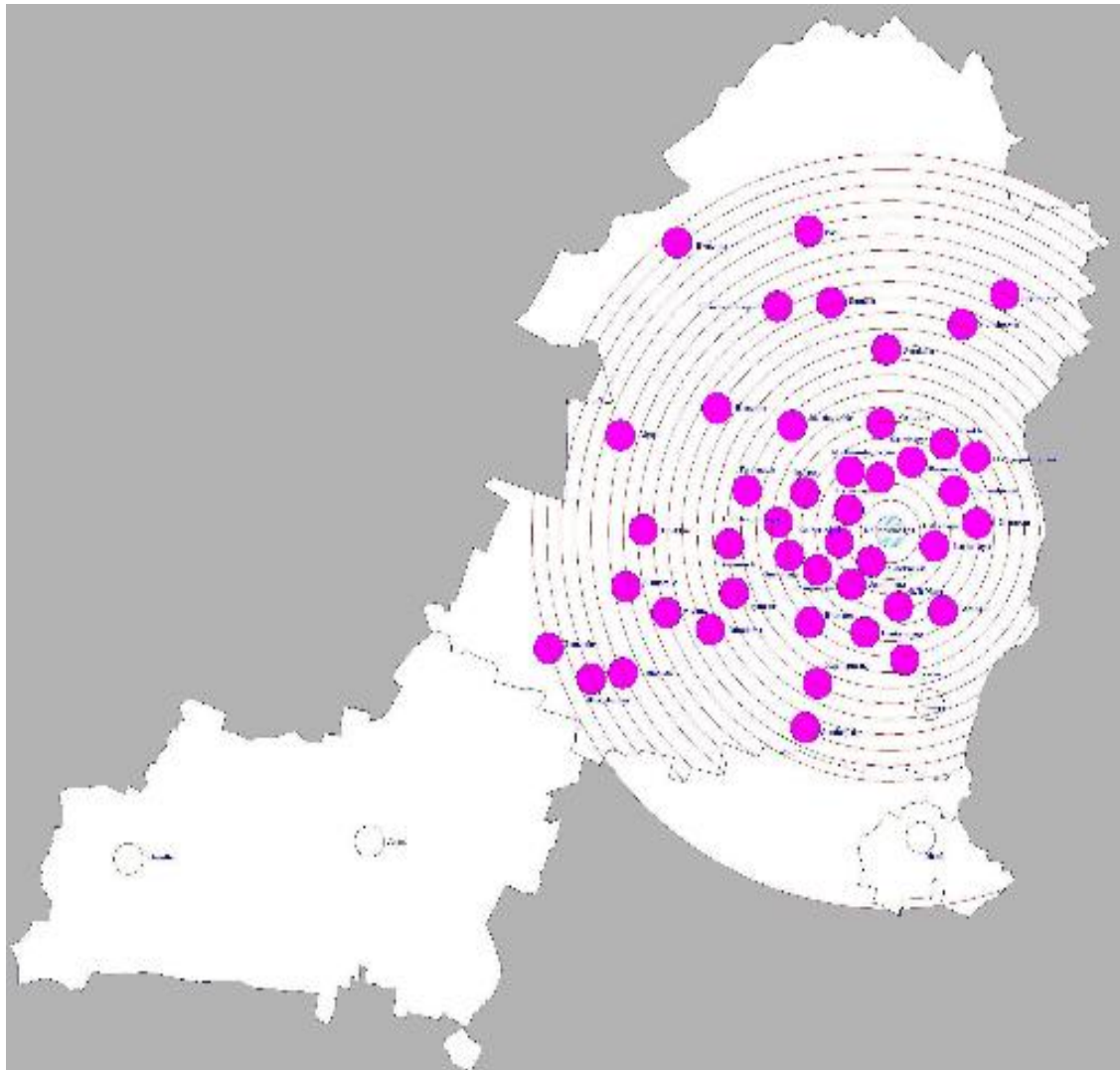


Fig.4 Location of different Mouza from the CBD

In Haridashpur area (located far away from CBD) the land value increased at 100% and in Patrapada in increased to 38%. Whereas the commercial land value increased at only 10% in kharavela nagar, 26% in Bhagabanpur and 50% in Patia. The agricultural land value increased at 67% in Haridashpur, 63% in Patia and 52% in Bhagbanpur. This new settlements are built in the outskirts of the town to fulfill the need of housing for people because the

land price is cheap and affordable for people compared to CBD. It is further observed that value of land increased from CBD towards the Periphery is not proportional for different types of land use. Land value increased at different subCBD due to the development of several reputed educational institutes, Hospitals, shopping malls and IT sectors in that locality.

The graph shows fluctuations of land value in Bhubaneswar. Some properties with closer distance in different pockets of the city away from the CBD have higher land value. There is a difference of land value between commercial and residential land use.

RESULTS AND DISCUSSION

The economic framework of an urban area is its transportation network upon which all types of land uses as, commercial, residential, and industrial developments rely. The land value in the city center is more expensive compared to the surrounding area in the study region due to better transportation network. Besides, the prices of commercial land are highest in cities. However the commercial land is not evenly spread across the city. It has been observed from the study that the city center contains the most expensive commercial land compared to different sub centers. A number of commercial areas away from the city center have high land value due to the location of important institutions, medical facilities and shopping centers.

There are nearly 35 localities in Bhubaneswar which are showing an upward price trend while 22 localities are witnessing a downward trend.

CONCLUSIONS

This simplified model of the agricultural rent can be applied to urban land uses. The discussion gives a realistic picture of land use patterns in urban areas. There is evidence of strong economic forces which determine the location of activities. It clearly shows that, the bid rents are high in different sub units where the transportation and the infrastructural facilities are adequately provided.

In a city there is a relationship between the idea of people being linked together and the physical distance of a neighborhood. The bid vary from one unit to another depending on the users need. The rent is high with specific facilities like prominent institutions, hospitals, markets and other general uses.

Urban form has been modified in today's planning. Transportation system has a big role in daily human movements. Land value is affected by accessibility aspect such as travel time and transportation cost. There are nearby bus stops in almost every locality. The majority of travel time to bus stop is 5 – 15 minutes. The longest time to reach bus stop is 20 minutes while the shortest time to reach bus stop is 5 minutes from the whole samples taken under study.

As city planning is an ongoing process, it is apparent that over time, all locations within the urban area are made accessible through transportation routes. The units which were less developed with no transportation routes may become more valuable units with transportation and other infrastructural facilities. This may be away from the core of the city or may be in the periphery of the urban area. Relatively intense development may take place along major transportation routes in different patches, due to the accessibility to the particular areas. Therefore access and location complement each other in the city planning process.

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