CHAPTER 7
SUMMARY AND CONCLUSIONS

The problems relating to land market operations in urban fringe areas have aroused substantial interest among economists, geographers and planners. This interest has been reflected in the studies available in the literature on various aspects of the problem. These studies however suffer from various limitations. These limitations relate to their static framework and relative neglect of the role of supply of land in the operation of the land market. Further, most of the studies relate to the situation in Western countries. This might be due to greater magnitude of problems (relating to fringe land market operations) or due to greater awareness of these problems in these countries compared to those in developing countries. In recent years, however, the increasing pace of industrialisation and urbanisation in developing countries also has led to multifarious problems relating to the 'development' of urban areas. The problem of 'spillout' or urban activity into fringe areas and the haphazard development of these areas is one of these. In the present study, we have attempted to explore the nature of forces operating and problems faced in the urban fringe areas with special reference to situation prevailing in developing countries. The analysis is carried out in the
framework of a land market model which takes account of dynamic forces on both demand and supply side in the market.

Analysis of Urban Fringe Land Market:

As noted above, the studies relating to land market operations have spanned various disciplines. The methods of analysis and the concepts developed for the purpose of analysis of fringe land markets have been, in most of the cases, specific to the concerned discipline. In our study we have incorporated the relevant concepts developed in various disciplines in the literature and have attempted to provide an integrated analysis of land market in a micro-economic framework. Treating land as an investment good with a stream of returns which flow far into the future, we have applied the principles of finance to develop a conceptual model of fringe land market keeping in mind the distinct characteristics of such markets in developing countries like India.

The analysis of fringe land market starts with very simplifying assumptions viz. perfect competition, absence of speculative activity and of government intervention in the market etc. Subsequently, some of these assumptions are dropped and the working of the market is analysed in a more realistic albeit more complicated framework. The assumption of homogeneity of land is dropped first. The heterogenous land market is segmented into relatively homogeneous submarkets – the
criterion for segmentation being the distance from the market. The analysis takes account of interdependence between the adjacent submarkets of land in the fringe area and the process of equilibrium in the land market is explained within a system of these interdependent submarkets. The analysis is further extended to include the existence of speculators in the land market. The phenomena of sprawl and speculation emerge, in our analysis, as an outcome of the free working of the market system.

We have used both semi-dynamic and dynamic methods of analysis for studying the working of land markets in urban fringe areas. The functioning of land market, in the semi-dynamic method, is analysed at a point of time whereas in the dynamic method it is done over a period of time.

The semi-dynamic analysis is treated as preliminary to dynamic analysis and is used to clarify and develop some basic concepts relating to the analysis of land market. A continuous Net Present Value (NPV) function is developed from which the demand and supply functions of land are derived. Equilibrium in the market is seen as a result of the interaction of forces on the demand and the supply side.

The dynamic analysis of the working of land market adapts the method of dynamics evolved by Lindahl and looks at the market functioning as a process over time. The events in the market,
at a given point of time are related to both past and expected future events in the market. The operator (buyer/seller) in the market plans not only for the (immediate) next period but also for many periods in the future on the basis of past information which affects his expectations regarding future course of events in the market. The price and area transacted in the market, in a given period, are viewed as outcomes of these plans of the operators in the market.

The land-use-pattern which evolves in the urban fringe area and the typical features of the operation of land market in these areas are explained within the analytical framework developed for the fringe land markets of growing urban areas. Though the model developed by us does not take account of all the variables in the market, it is flexible enough to incorporate the impact of other exogenous variables in the system. Thus, we introduce another variable viz. taxation in our system and analyse its impact on the working of the land market within the framework of our model. Specifically, the effect of three taxes - namely, land revenue, capital gains tax and property tax, - on demand and supply of land and through them the likely impact on the phenomena of sprawl and speculation is discussed in the context of both semi-dynamic and dynamic analysis of the land market.

The Ahmedabad Fringe Land Market

The conceptual framework thus developed was applied to the case of the Ahmedabad urban fringe land market and the process
of conversion of rural lands into urban uses, was analysed for the period 1961-76. The South-West segment of the fringe area of the city of Ahmedabad was selected as our study area. This selection was done in view of the intensive residential development in this area.

In accordance with the conceptual set-up, the study area was divided into various submarkets for land. Three different criteria were used for this sub-division:

i. distance (of the plot of land) from city centre,

ii. distance from city periphery, and

iii. village-wise location of the plot.

The range of distance taken to define a submarket was 1 1/2 miles both for criteria (i) and (ii). Various aspects of land market activity were explored for each of the submarkets for the period 1961-76.

The aspects studied related to the land use pattern and the structure of prices in the fringe area. The analysis of the land-use-pattern involved a study of the volume of market activity which led to conversion of agricultural lands into urban uses in the fringe land market as a whole as well as in various submarkets of land in the fringe area. The analysis of market activity in various submarkets of land
(as per distance-wise and village-wise classification) brought out the inter-periphery and intra-periphery development in the fringe land market.

The volume of market activity could be measured either in terms of the number of transactions taking place in a given area in a given period or in terms of total area transacted in that period. The number of transactions, however, was found to be a spurious indicator of market activity. The spuriousness arose from the possibility of incorrect statement of the number of transactions under certain circumstances. Thus, for example, a transaction made by a cooperative housing society would hide a number of individual transactions and lead to an understatement of the actual number of transactions in the area. An artificial break-up of one transaction into many transactions (on tax considerations), on the other hand, would result in an overstatement of number of transactions. Area transacted, therefore, was found to be a better indicator of market activity and most of our empirical analysis of market activity was based on this variable.

**Empirical Results:**

During 1961-76, approximately 5.8 million square yards of area was transacted in the fringe land market of our study area. The distance-wise and village-wise classification of this area indicated a concentration of development at some distances
from the periphery as well as at some points across the periphery.

The intra-periphery (village-wise) analysis of area transacted showed that development was highly concentrated in the village of Vejalpur, which accounted for 43.98 per cent of total area transacted during the period 1961-76. Over time, the share of Vejalpur had shown a decline as the development spread to other villages in the fringe area.

As to inter-periphery development, the share of nearer submarkets in total area transacted in land market was much higher than those of farther submarkets. This conforms to our hypothesis regarding the intensity of development in fringe area at various distances from the city area. The share of various submarkets fluctuated from year to year and the relative position of 'adjacent' markets changed too, but for most of the period the nearer submarkets dominated the activity in land market. Development infiltrated to the farther submarkets only in later years (post-1967 period) but their share in total market activity remained very small throughout.

The subdivision of the market into submarkets according to distance from periphery covering a range of distance of half-a-mile (instead of our defined 1 \frac{1}{2} mile) each exhibited very 'thin' development in submarkets nearest to periphery. The phenomenon was a consequence of the Green Belt Policy of
the Government which banned development of land for non-agricultural (NA) purposes around half-a-mile from periphery. Few exceptions were, however, made which resulted in some (24.46 per cent of total) development in this area.

The development in the fringe land market of Ahmedabad had not spread beyond 3 miles from the periphery. This development, however, was far from compact. The nearer sub-markets showed a more compact form of development than the farther sub-markets and their position in this respect vis-a-vis the farther sub-markets improved over time. The farther sub-markets, besides showing a more sprawled pattern of development, were also characterised by greater amount of resale activity.

During the period 1961-76, the area transacted increased at the rate of 4.06 per cent per annum. It however showed no steady trend over time. This was true for the land market as a whole as well as for all the sub-markets. The lack of any trend in area transacted was explained in terms of change in the consumers' purchase pattern over time which reflected itself in the lower average size of transactions in fringe area. The lower average size, on its part, could be due to higher mean price of land in the market.

Land prices in the fringe market increased at the (trend) rate of 16.90 per cent per annum during our study period. The
rate of growth of prices was almost the same for various sub-markets. The absolute mean price of plots in nearer sub-markets was found to be higher than that of farther submarkets, confirming our hypothesis regarding this relationship put forward in earlier chapter. A division of markets into smaller submarkets covering a range of distance of half-a-mile (instead of 1½ mile as defined in the criteria adopted) showed no such tendency. The absence of any tendency regarding mean prices was also noted with respect to various village sub-markets. It was, however, found that prices of plots located at same distance from city centre or city periphery though lying in different villages were not too different from each other.

Prices within each submarket varied from plot to plot. Price variation, as measured by coefficient of variation, showed no stable pattern over the various submarkets. There was, however, a tendency for price variations to decline over time as the market became more competitive. The price variation in the market was analysed in terms of the competitiveness of the market and the black money margins in the market. The analysis of the latter aspect was more in the nature of observations (conjecture) rather than any concrete conclusions deduced from data.
The statistical analysis of Ahmedabad fringe land market led to some broad conclusions relating to the division of the market into various submarkets. The segmentation of the market into various submarkets was carried out to give relatively more homogeneous subgroups - each subgroup showing characteristics which are very distinct from the adjacent subgroup. Further, the analysis of land market within a system of submarkets helped to bring out various characteristics regarding the pattern of development over various submarkets. In this context, village-wise classification of the markets, apart from indicating a 'concentration of development' in a particular village, did not reveal much. On the other hand, the distance-wise classification of the market brought out some interesting results relating to pattern of development in the fringe area.

In the distance-wise classification, as noted above, each submarket is defined as a group of plots lying within a range of distance from the city. The range of distance was so chosen as to give a relatively homogeneous and distinct submarket for land. This range of distance will vary from city to city and from period to period. In the case of Ahmedabad, we found that a very small range - of say half-a-mile - did not define a submarket distinct from the adjacent submarket. As explained above neither mean price nor area
transacted show any consistent pattern over these (smaller) sub-markets. This confirmed our hypothesis that land values, reflecting consumers' preference do not change continuously over distance but do so in a discontinuous manner.

Our analysis of Ahmedabad fringe land market also reveals the analytical superiority of segmenting market according to the criterion of distance from city periphery as compared to distance from city centre. This implies that decision relating to purchase/sale of land in the fringe area of Ahmedabad are based more on the consideration of distance of plot from city periphery rather than that of city centre. This conclusion is borne out by the cross-section analysis of various aspects of land market. The relationship of a given variable over distance comes out much sharper in case of submarkets classified according to distance from periphery rather than for those classified according to distance from city centre.

Government Intervention:

The land market, during the period 1961-72, was fairly free and competitive market. The post-1972 period was, however, characterized by increasing direct government intervention in the form of legislative acts, viz. the Gujarat Vacant Lands in Urban Areas (Prohibition of Alienation) Act of 1972 (lasting till August 1975) and the Urban Land (Ceiling and Regulation) Act of 1976. The impact of these Acts was mainly felt
on the volume of transactions in the market. During the years 1973, 1974 and 1976 the market activity was at a very low ebb.

These two Acts were the main policy instruments used by the government during the period 1961-76 for tackling some of the problems relating to the functioning of the fringe land market in Ahmedabad. These problems related to the prevalence of speculation and high prices of land in fringe areas. The imposition of Acts, however, failed to control the land prices. As to their impact on speculative activity, no definite conclusions can be reached. This is due to the fact that most of such activity goes on behind the scene and we have no data to show its volume at a point of time or over time. The Acts, however, did curb almost all the open market activity in the fringe land market as shown by the steep decline in area transacted in years 1973, 1974 and 1976. These 'unintended' effects of the policy measures on market activity and prices in the fringe area could be due to lack of full understanding, on the part of administrators, of the behaviour of buyers and sellers in the land market.

Econometric Model of Land Market of Ahmedabad Fringe Area:

A simultaneous equation model of fringe land market was formulated and tested for the Ahmedabad Land Market to analyse the behaviour pattern of operators in the market. The exercise
provided meaningful insights into the working of the market. Two variations of the model were tested - one excluding expectations and the other including them.

The demand for fringe land is seen as a function of own price and price of land in the nearer submarket. The supply of land is explained by price of land and returns from farming. The returns from farming are measured by the index of average yield for previous two years in the area. All the results of the econometric model are in consonance with our conceptual framework and a priori reasoning. The demand for fringe land is found to be negatively related to its own price and positively related to the price in the nearer submarket. The supply of fringe land, on the other hand, is positively related to own price of land and negatively related to the index of yield in the area. It may be noted that own price of land in case of both demand and supply of land, turns out in our econometric model to be more important variable than the other variables.

The results of the model including expectation are not as conclusive. This is partly due to the difficulties associated with the specification of the expectation function properly. Also, our expectation function included only expectations regarding future prices as an explanatory variable. In the land market, expectations regarding other variables
like possible tax/expenditure decisions of the government or imposition of an Act would play as important - if not more important - a role in the decision making process of the operators. This was revealed very well by the sudden spurt in market activity in Ahmedabad fringe area in 1975 when area transacted increased by 580 per cent over the previous year. A part of the increase could be attributed to the anticipation of further restrictive measures and the decision of the people to take advantage of the free market as long as it lasted.

The empirical analysis of the Ahmedabad fringe land market shows that the land market has been quite active and has become more competitive over time due to increasing number of operators and increased flow of information among them. The price and area transacted in the market as well as in various submarkets of land are determined simultaneously by forces of supply and demand. The consequent land-use-pattern and 'problems' relating to conversion process are a direct outcome of the market process and cannot be tackled well without taking cognisance of the market forces.

Problems and Policies:

The empirical analysis points towards certain problems relating to fringe area 'development' in Ahmedabad. Over the period 1961-76, the economies of conglomeration and accessibility
to facilities have led to pockets of development at certain points in the periphery. The development, however, apart from these few areas, has spread far and wide. Again, even within these few areas the form of development is not very compact. The pockets of development are surrounded by fields decreasing the productivity of land for agricultural use. The fringe area is littered with plots which have been lying unused for years. These plots include the plots which have been NA'd but not developed as yet as also the plots not NA'd but adjacent to the residential habitation. The non-use of several acres of land in the fringe area and the consequent loss of production is a cost inflicted on the society by the free functioning of the land market.

The reason for the sprawl type of development in Ahmedabad fringe area is the relative cheapness of land in farther areas as compared to the nearer ones. The same factor explains the movement of population from city to fringe area too. Actually, as shown by our econometric model the price of land is a very important variable in the demand for land in the Ahmedabad fringe land market.

The low price of land in fringe area (and even lower in farther fringes) in addition to leading to sprawl has also resulted in wasteful use of land. This may be suspected
on the basis of large average size of transaction in the
fringe area. Land is a scarce commodity and in a growing
urban area like Ahmedabad, going to be more so over time.
The long run social cost of this 'wasteful' use is going to
be very high.

Some Policy Implications:
The various policy measures which can be adopted by the
government to tackle the above mentioned problems in the
Ahmedabad fringe area can be classified into three catego-
ries: (i) tax and subsidy, (ii) institutional, and (iii)
quantitative controls. We will now discuss some of the
implications of these policy measures.

The problem of sprawl and related problems can be
checked by the government through a package of tax-cum-
subsidy measures aimed at changing the relative attractive-
ness of the farther areas in fringe vis-a-vis the nearer
areas (including the city area) for the potential buyers.
In the government policy, a premium should be placed on
compact development. Lands farther off could be made less
attractive by making NA prohibitively expensive beyond a
point. A conversion tax\(^1\) could be levied at a rate high

\(^1\)The conversion tax was levied in Ahmedabad fringe area in
1976-77 but the rate of tax is too low. Further, the
impact of tax on 'development' cannot be analysed since the
market is still choked with the imposition of the Ceiling
Act.
enough to offset the advantage of buying cheap land. The rate of conversion tax could be made progressive with distance from the periphery. Simultaneously, efforts should be made to improve the bargaining strength of the farmer and to increase his reservation price. This could be done, as our analysis proves, through improvement in agricultural conditions and agricultural productivity of land. This will lead to an increase in price of land and in combination with the conversion tax may lead to a reduction in demand for land in farther areas. ²

The high price of land in fringe area, due to the interdependence between the markets, may lead to higher price in the city area. The effect of this (high price) will have to be counteracted by the government through various direct and indirect subsidies like availability of cheap loans for building houses in city area, etc. The high rate of property tax in the city area — in so far as it is a deterrent to 'building' in city especially for the landlord-rentier class — may have to be reformed also.

²An increase in agricultural productivity and hence returns from farming will shift the supply curve to left. Meanwhile, conversion tax will lead to a downward shift of demand curve. The results of this policy package will be to reduce the volume of transaction in fringe area as well as to increase the price there.
The high price of land in fringe area may also lead to a decline in average size of transaction and thus reduce the wasteful use of land in the fringe area. A supplementary measure to achieve the same objective could be quantitative control on the size of plots in the area.

Though our analysis of Ahmedabad land market does not conclusively prove the prevalence of speculative activity there is some evidence to show the 'speculative element' in the working of the market. This evidence consists of long periods of holding of land before developing it and (high) rate of turnover of plots from one hand to another during the holding period.\(^3\) The conversion tax could be so framed as to discourage the 'speculative activity'. This could be done by progressively increasing the rate of conversion tax over time till the plot is developed. This may discourage holding of land for long periods.

Another way to tackle the twin problems of sprawl and speculation is to allow the 'development' only through professional developers or public sector bodies (e.g. Gujarat Housing Board) or Cooperative Housing Societies. These

\(^3\)This 'evidence' is based partly upon the records of land transactions which show a substantial degree of resale activity in the fringe area and partly upon the observations made by various operators in the land market whom I met.
agencies do not, normally, indulge in speculative activities and do not hold land for long periods of time. The turnover of activity, in case of developers at least, is very high. They buy land, develop it and sell it and so on. Higher turnover leads to much larger profits than what speculation might yield. By the same token, they will not buy in farther areas since land there 'ripens' for use after a long time and they are not interested in blocking their money in such ventures. The Gujarat Housing Board, in framing its policies in accordance with the desired government objective of compact development, may shun farther areas till nearer ones are developed. The activities of cooperative housing societies may not be so easy to control and the supplementary measure of tax-subsidy proposed above may have to be used.

The development through these agencies, apart from its salutary effect on phenomena of speculation and sprawl, has certain other benefits too. These agencies buy large areas of land at a time and 'develop' them according to an 'approved' plan. The community, thus, enjoys the benefits of well laid-out roads, parks and other facilities which may not emerge from the haphazard planning of individual buyers.

It is not only the buyers who stand to gain from development through these agencies, the farmer gains too. As noted above, these agencies buy large chunks of land at one time and in most cases buy whole of the plot (rather than
part of it) of the farmer/s. The individual buyer can seldom buy the whole field. By being able to sell whole of the field in one deal, the farmer can avoid the problems which he would encounter when left off with a part of his plot. The plot which is left out, normally is too small to be of any use in agriculture and is not-so-well located (since the better located part of the farm would have been sold first) as to have much value from the point of view of urban use.

Limitations of the Analysis and Suggestions for Further Research:

The objective of our study was limited to an understanding of the working of land market in urban fringe areas in a developing country like India. We have illustrated the working of such a market with reference to situation prevailing in Ahmedabad. The conceptual framework as well as the analysis of Ahmedabad fringe land market show that it is not the type of problems but the magnitude of these problems which distinguishes the working of fringe land markets of developing countries from those of the developed countries. The difference in magnitude is a consequence of varying environmental factors prevalent in these economies. These environmental factors relate to the forces affecting supply and demand for land as well as the institutions operating in the respective land markets of these countries.
Our study of fringe land markets has taken cognisance of some of these distinct forces. The study, however, suffers from various limitations. Before closing this study, it is important to point out some of these. The limitations relate partly to the assumptions of our conceptual framework of the working of the fringe land market and partly to the empirical basis of our analysis of Ahmedabad fringe land market.

The conceptual framework of our model of fringe land market is based on the simplistic assumption of perfect competition. This assumption is made as a first step towards an understanding of forces operating in fringe land markets. It would, however, be worthwhile for future researchers to analyse the working of fringe land market taking account of imperfections prevalent in the functioning of such markets.

In our analysis we have attempted to take note of some market imperfections relating to the heterogeneity of land. This heterogeneity problem was however circumvented by segmenting the market into 'homogeneous' subgroups and studying the land market in a system of perfectly competitive sub-markets. In this framework distance from urban area was selected as the criterion for segmenting the market into various classes. The distance, however, is only one of the characteristics leading to heterogeneity of land. Some other criterion/criteria could also be selected to subdivide the
market into homogeneous submarkets for land. We have not gone into this issue.

We have already pointed out several limitations relating to availability of data elsewhere in this study. In the absence of reliable data relating to 'development' of various plots of land we could not draw strong conclusions relating to the phenomena of sprawl and speculation. Further, due to same reasons, it has not been possible for us to develop any concise indicator of these phenomena.

In view of the limitations mentioned above, our study of the working of fringe land market under Indian conditions has to be treated as of an exploratory nature. We have attempted to take an integrated view of forces on both demand and supply side as they interact in the formation of prices in such a market. Within the limitations of availability of data on a small number of variables we have tried to provide a simple model of the working of fringe land market and empirically tested a few hypotheses. Viewed in this context, the results have been fairly encouraging. Needless to say that much further work can be done by future researchers to take into account the complicated nature of the working of such markets in a real world situation.