

Land Use Change in Osaka Metropolitan Area in Terms of Land Price

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The aim of the paper is to make clear the relationship between land use and land price through analysis of Osaka Metropolitan Area. The changing uses of land to urban growth, particularly altering land prices are emphasised.

Here the author set up a concept "real land price". By real land price he means is a return reduction i.e. a net profit per area divided by interest rate. He considers savings (including investments) as the potential power of residential area. Savings in this area mean the change in the amount of savings-debt difference in a year. The real land price of residential area is calculated from the savings of the house per area divided by interest rate. Given the existing land price curve; if the real land price of some firms or residents is below the existing ones, they may move out as far as the both price meet. On the contrary, if the situation is reversed, they may approach the civic center as near as both of the prices meet. The difference of prices makes the change of land prices (Fig.1, Fig.2)

Osaka City and its Greater Metropolitan Region with 2.6 million and 22 million population in 2000, respectively, can represent a major Japanese City, Which has experienced bombastic urban growth in suburban area particularly in 1960', along with the high economic growth of the country.

The potential power of land of each land use is calculated in the following way, to arrive at real land price. A comparison of real land prices made with the existing ones. The following results are obtained.

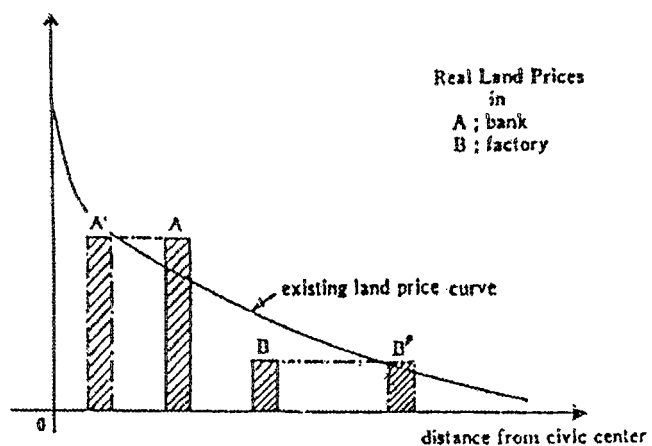
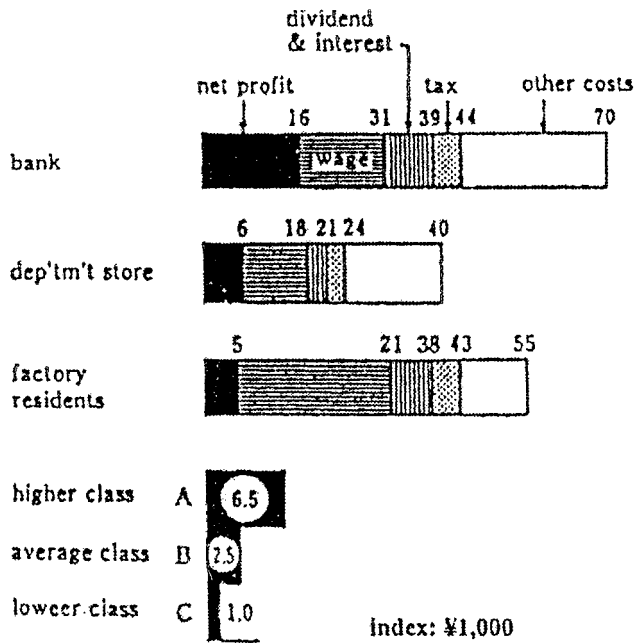


Fig.1 The Concept of Land Use Change Based on the Author's idea



The potential economic power of land of each land-use type is calculated in the following way, to arrive at 'real land prices' :

- 1) Land prices of the CBD are estimated by those of areas occupied by bank buildings (because of data limitations):

$$\frac{\text{Sum of deposits per area} \times 0.006}{0.05}$$

where the interest rate is set at five per cent after cost analysis by the Association of Japanese City Banks.

- 2) Land prices of commercial area are estimated as:

$$\frac{\text{Sum of deposits per area} \times 0.02}{0.05}$$

where the interest rate is set at five per cent after cost analysis by the Ministry of International Trade and Industry.

- 3) Land prices of industrial areas are estimated as:

$$\frac{\text{Value added per area} - \text{Wage per area} - \text{Other cost per area}}{0.05}$$

where the interest rate is set at five per cent after cost analysis by the Ministry of International Trade and Industry.

- 4) Land prices of industrial areas are estimated as:

$$\frac{\text{Annual household income} - \text{Household expenditures}}{\text{Ground area of the house} \times 0.05}$$

where the interest rate is set at five per cent.

Fig.2 The Source of Real Land Price

1 . Banks and department stores lead the price of land and their influences on land pricing has been so great that we can even see their new location at best spots in the C.B.D. or in sub civic centers

on the fringe of the C.B.D..

2 . Theoretically selection of individual residential sites is largely determined by the user's ability to pay land rent. For instance, those with higher income live in favourable areas like hilly places and people with average income live in less favourable areas where land is low and damp, or the air is often polluted. People with lower income living in rented houses have to endure the worst housing conditions. Extremely poor families gather around the inner Loop Line in down town areas forming slum like areas. Their depressed financial condition make escape from these areas nearly impossible, logically owing to user's ability to pay land rent. With the increase of income, residents with higher income move out to the suburbs, so that the income level of the residents declines relatively in down town areas.

3 . Concerning the location of industry most of the factories have moved out of the C.B.D. to find sites where real land prices of industrial area meet the existing land prices. For instance, larger factories have expanded across the plain on the right bank of Yodo River, where JR (former Japan Railway) and Super High way services are available, while many smaller ones move to eastern part of Osaka City considered to be a less favourable location (Fig.3, Fig.4)

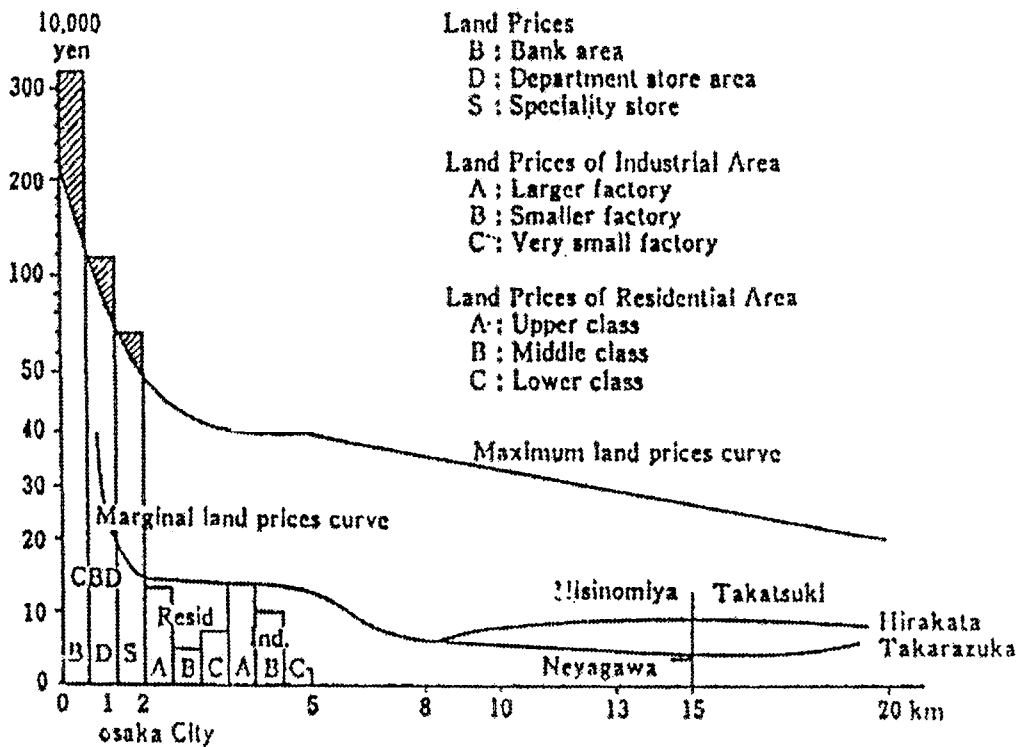


Fig.3 Land Prices Curve in the Osaka Metropolitan area, 1965

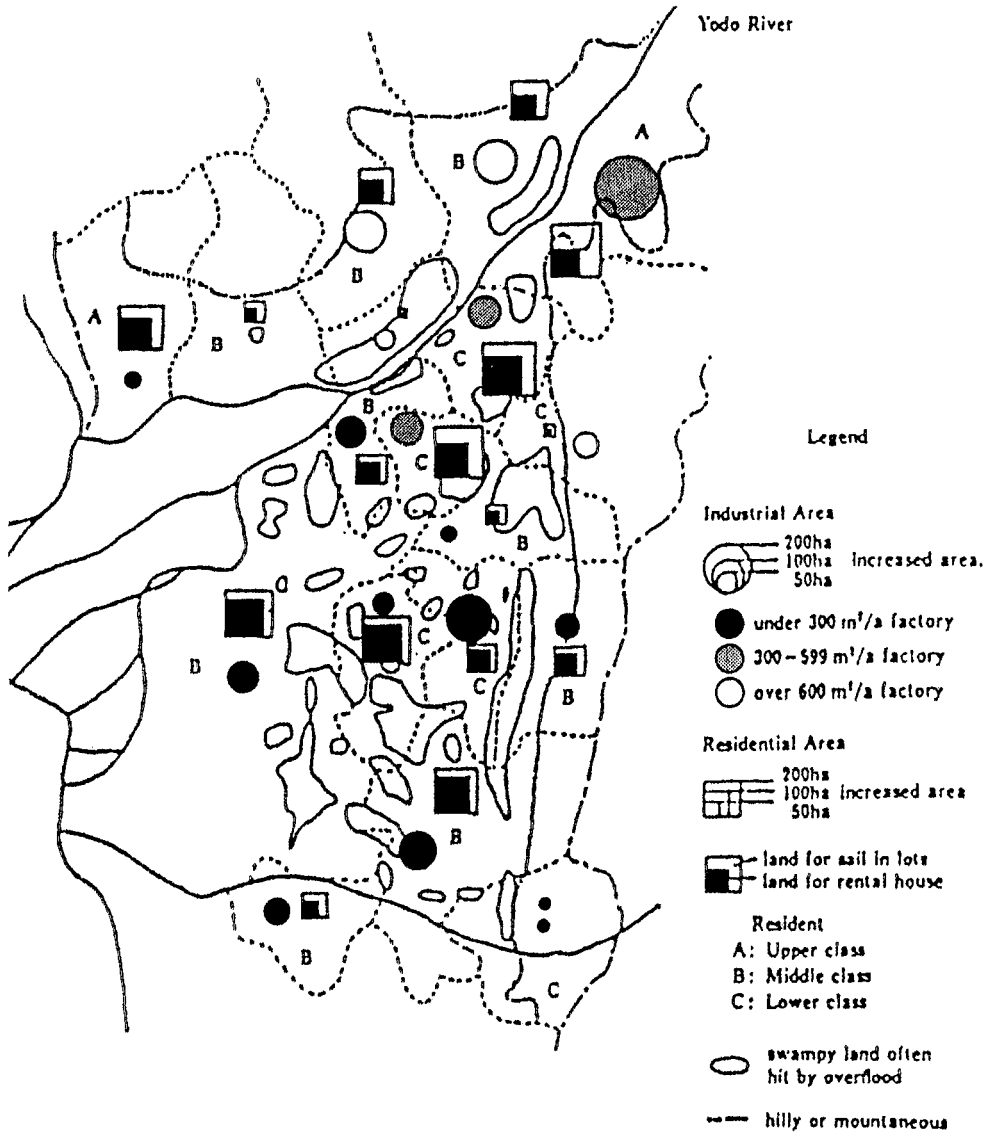


Fig.4 Urbanization of the Osaka Metropolitan area, 1960-1964

Since the late '70s, there has been a decrease of rate of diversion into industrial land use from firm land what with the stabilized economy and what with increased volume of direct investment overseas. And such big retailing firms as department stores/supermarkets have been constructed one after another. From 1986-1990 there was an extremely sharp increase of land price evoked by huge investments so called 'big bang' into real estate market under very low interest rate.

Here the author tried another analysis of the Osaka Metropolitan Area in 1988. The followingg was revealed.

1 . With continuous segregation of living places as per socio-economic class, rate of "pseudo" land ownership; only sharing with many residents by construction of high rise accomodation i.e. only owninging floor space.

2 . Only real land price of residents with top ranking in quintile met with the trading land price so far as eastern suburban Osaka like Kadoma Neyagawa locating about 15-20 kilometers from Civic Center of Osaka City which were not much favourable place to live in.

3 . Talking of commercial land, even the real land price of bank and department stores, which had been the leader in the land price, became below the tradingone. So in stead of little independent construction of these firms in downtownOsaka, there appeared additional locations of them in relation to the urban redevelopment projects in the suburbs.

4 . As regards industries, with a continuous exodus from the Metropolitan areas only such industry which criated higher value added per area as printing and electrical products making industry locacted most periphery and environ the Mother City Osaka where the both land prices meet (Fig.5, Fig.6)

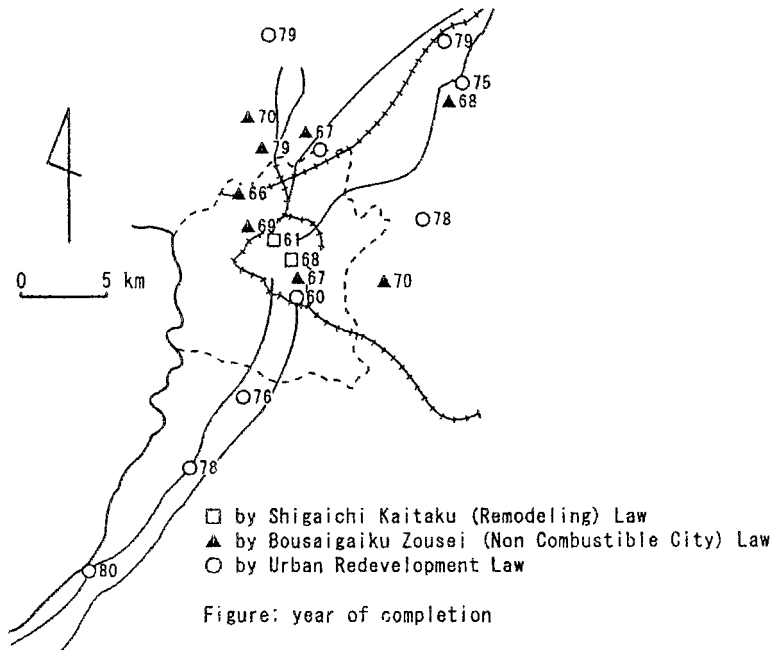


Fig.5 Urban Redevelopment Projects in Osaka Metropolitan area

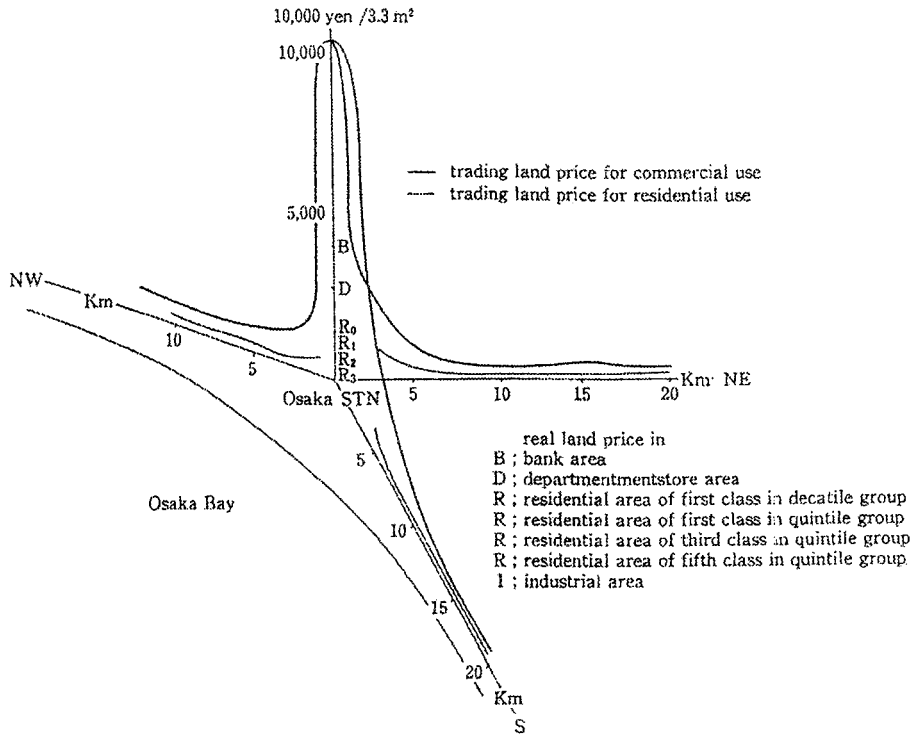


Fig.6 Land Prices Curve in the Osaka Metropolitan area, 1988

Japanese 'bubble' economy burst in early '90, which caused the sharp plunge in land value. Trading land price of commercial area in Osaka in 2000 dropped to one fourth from 1991. The price is still dropping. Since the burst of 'bubble economy', the banks got negative profits due to writing off bad loans and the department stores/supermarkets lost sum of sales and profits owing to the severe depression of Japanese economy, there disappeared the land price leaders. From 1996 to 2001 about one third of the offices of banks in Osaka City disappeared

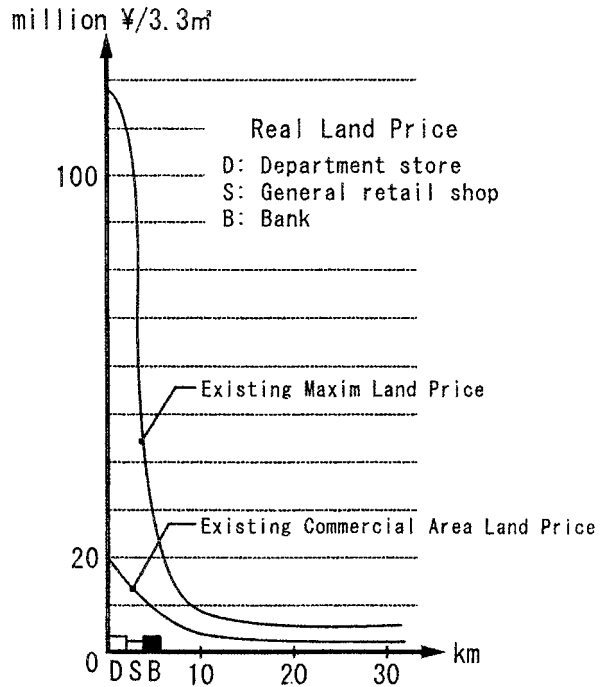


Fig.7 Bid Rent Curve of Commercial Area, 1998

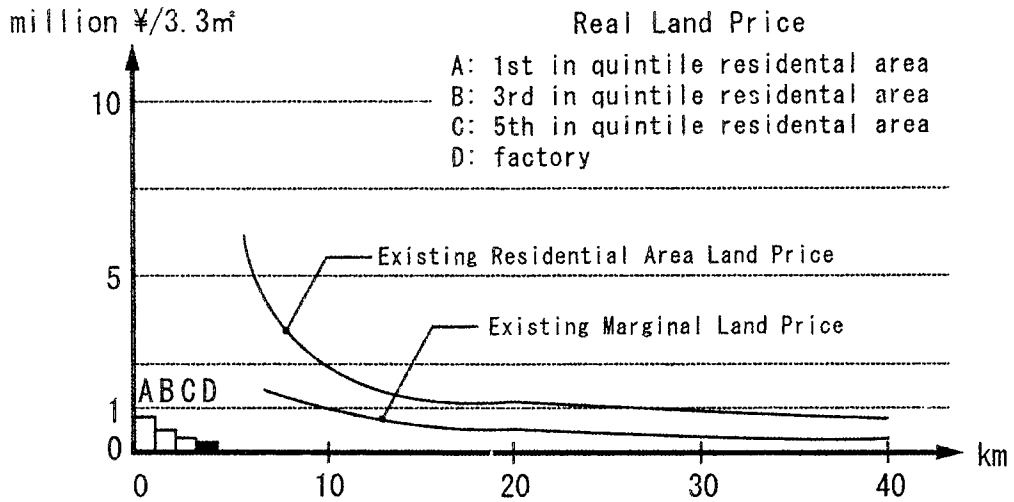


Fig.8 Bid Rent Curve of Residential & Industrial Area, 1998

which is a typical phenomenon of disappearance of powerful land price soaring factors.

In spite of the sharp plunge in trading land price, industrial area in the whole Osaka Metropolitan area still diminished the location due to economic depression and exodus to foreign country by investments overseas. On the contrary here has been a returning of residents to the down town area due to the land priceplunge although it has been in the forms of accomodation of 'high rise' buildings. This is because dropping rate of residential area has been relatively lower than that of commercial and industrial area and dropping rate of wage has been slighter (Fig.7, Fig.8, Fig.9)

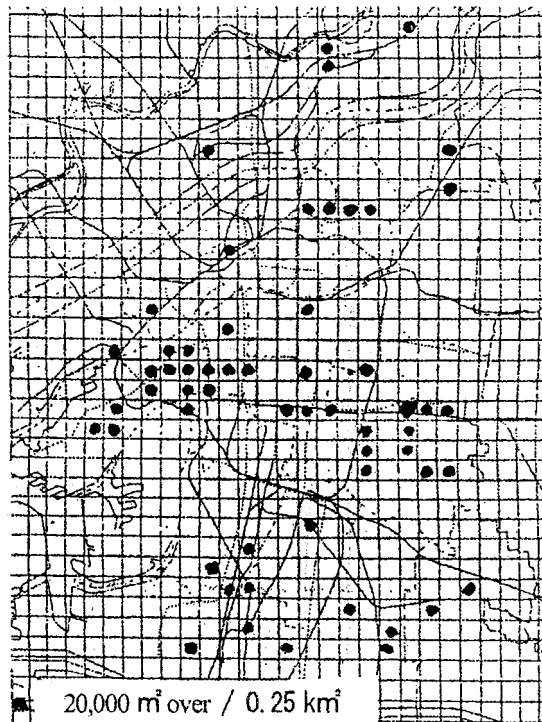


Fig.9 Largely increased residential area in Osaka City, 1985-1993

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