

The Rise of Land Prices in Japan: The Determination Mechanism and the Effect of Taxation System

KEIZO TAKAGI*

This paper examines the determination mechanism of land prices in Japan with particular emphasis on the land taxation system, which has played a central role in Japan's land policy, and also investigates the major causes behind the current escalation of land prices. We argue that the particular features of Japan's land price movements, i.e. intermittent sharp rises and subsequent downward rigidity, can be mainly explained by inadequacies in the land taxation system, e.g. adverse effects on effective supply and intensive utilization of land. We also argue that recent excessive monetary ease has possibly been one of the causes of current skyrocketing land prices in Japan.

I. Introduction

In 1985, land prices in the commercial districts of metropolitan Tokyo began rising precipitously. In 1986 and the first half of 1987, the trend accelerated and gradually spread to peripheral residential areas. In other regions of Japan, with the exception of a few other cities, however, land prices remained relatively stable on the whole. Consequently, the extreme polarization of land prices—much higher in Tokyo than elsewhere—emerged. This development made it more difficult for the average citizen in metropolitan Tokyo to acquire land for housing. Furthermore, it exacerbated the skewness in the distribution of wealth: landowners saw their assets increasing in value faster than those of householders not owning land, and landowners in the Tokyo area benefited much more than those elsewhere in Japan. This inequality stemming from skyrocketing land prices is now becoming a major social issue. In order to cope with the problem, the government introduced a series of emergency measures beginning in mid-1987. First, it designated areas where land prices were skyrocketing as “areas where land transactions were to be monitored” in order to suppress exorbitant prices; second, it requested financial institutions to exercise self-restraint in financing land purchases; third, it imposed an

* Economist, Research Division I, Institute for Monetary and Economic Studies, the Bank of Japan.

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extra heavy surcharge on capital gains resulting from the sale of land held for very short periods.

After mid-1987, the accelerating rise of land prices in Tokyo slowed down—in 1988 the increases subsided to a much lower pace. In fact, in some areas, prices declined considerably. Some observers criticized the government's emergency measures, arguing that they served merely to suppress the rise of land prices and did not in any way provide a solution for alleviating the fundamental pressures that had been boosting land prices. Some others strongly asserted that in the long run the government's measures would only distort the efficiency of resource allocation. Many have demanded that the government's land policy—including the current land taxation system—be completely revised.

This paper has two purposes: it clarifies the reasons for the recent big increase in land prices, using a simplified theory of land price determination. And it focuses on Japan's land taxation system which has played a central role in the nation's land policy. The paper thus explains the relation between the particular features of Japanese land prices, including their extreme exorbitance and upward mobility or instability, and the land taxation system. The analysis in the paper also provides some insights into the type of land taxation system that would be desirable.

The outline of the paper is as follows. In Section II, long-term movements in land prices in Japan and the history of the related taxation system are summarized. Also, features of current skyrocketing land prices and consequent harmful effects are pinpointed. In Section III, the mechanism by which land prices are determined will be clarified with a simplified model. At the same time, how the land taxation system affects land prices and the utilization of land will be studied. Finally, in Section IV, we shall study the basic factors that caused the escalation in land prices, the interaction of those factors with Japan's land taxation system, and desirable modifications in the tax system.

The major conclusions of this paper can be summarized as follows:

(1) The skyrocketing land prices since 1985 have taken a somewhat different form compared with earlier episodes of rapid increases. Recent increases, unlike those in the past, originated in the commercial districts in the central part of Tokyo and have been concentrated there, not spreading all over Japan with the exception of a few other cities such as Osaka and Nagoya. The rapid increases in land prices, moreover, occurred at a time when the general level of prices (for example, the overall wholesale price index) was relatively stable. These two trends — the much more rapid increases in Tokyo than elsewhere, and the huge increase in the relative price of land — have created a more unequal distribution of wealth and income. Landowners have seen their position improve much more than those who do not own land, and Tokyo residents have experienced an enormous increase in their wealth relative to those living outside the Tokyo area.

(2) Structural and regional changes in economic activity are basically the most important factors accounting for the recent rise in land prices in Tokyo. Trends in the high-tech use of information and the internationalization of businesses gave strong incen-

tives to firms and financial institutions to concentrate more of their functions in the nation's capital. This trend, and expectations for its continuation in the future, escalated demand for land in Tokyo. Given these basic factors intensifying demand for land in Tokyo, appropriate allocation of the economy's resources made it inevitable and desirable that land prices in Tokyo increase relative to land prices elsewhere.

(3) It is also argued that the relative easing of monetary policy in Japan after the Plaza Agreement in 1985 contributed to skyrocketing land prices. Indeed, it is true that the considerable decline in interest rates in 1985-88 lowered the opportunity cost of holding land and consequently encouraged demand for it. Moreover, it could have made speculation in land easier than it otherwise would have been and made relative price changes more dramatic (pushing up land prices in Tokyo excessively). However, it is too simplistic to believe that a tightening of monetary policy could have sufficed to rectify Tokyo land prices because of many distortions as discussed below. The issue is that there exist inherent defects in the real estate market, which have prevented market mechanisms from working properly in response to the underlying excess demand for land in Tokyo.

(4) The distortions caused by the tax system have been especially important. The tax system, in principle, should promote the effective supply and efficient utilization of land. In practice, it has given perverse incentives; it has worsened the excess demand and hampered the more effective use of land. The taxation of land values should, in theory, reduce land prices relative to what they would be in the absence of taxes (due to negative capitalization equal to the present value of the future tax burden). Such effects are prevented in Japan, however, because the effective rate of property tax and inheritance tax on land are both set extremely low. Landowners thus tend to cling to their land and permit its uneconomic or less-intensive utilization. These effects are worsened by the heavy tax rate on capital gains (especially for short term), which reduce incentives for landowners to sell, thereby tending to inhibit the effective supply of land and to freeze land use as it is (under-utilized).

(5) In various periods in the past, Japan's land tax system was changed with the intent of increasing the effective supply of land. At other times, it was changed with the intent of preventing land speculation. Changes in tax policy corresponded to the shifting emphasis of the government land policy. The two objectives of government policy, however, can be contradictory. More importantly, the government chose to make all changes through adjustments in the tax rate on capital gains; the effective rates of property tax and inheritance tax on land were kept low. This paper argues that the instability of land prices, and their asymmetric flexibility (downward rigidity but rapid adjustment upward), can be traced by inconsistencies in the tax system between the taxation on capital gains and the taxation on property and inheritance.

(6) To promote greater stability and the rectification of land prices, the government's policy must aim at removing such inconsistencies in the tax system and promoting

the more efficient use of land. To make landowners recognize the effective costs of holding property, the government should raise the effective rate of property tax to an economically relevant level. It should similarly adjust inheritance tax. Raising these effective tax rates on land could eliminate the distortions which now make the holding of land preferred. The government should similarly consider a downward adjustment in the heavy tax rate on the short-term capital gains stemming from land sales because it has the effect of hindering the effective supply of land.

II. Characteristics and Problems of Skyrocketing Land Prices

Before studying the mechanism which determines land prices, in this section we will first review the long-term trend of land prices in order to clarify characteristics of recent skyrocketing land prices, and the adverse impact produced by their accelerating rise.

A. Characteristics of current skyrocketing land prices

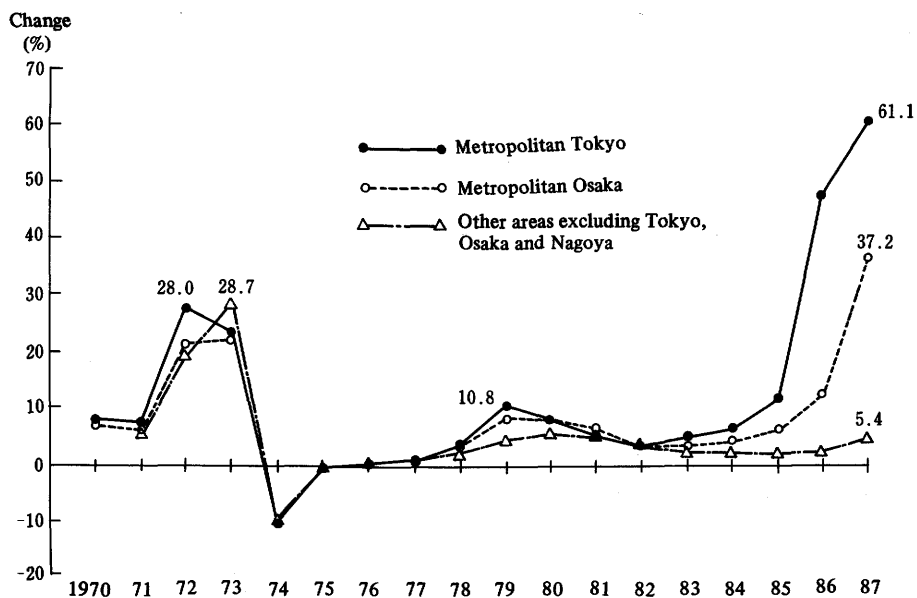
1. Recent situation

As Japan's high economic growth started to decelerate in the second half of the 1970s, the rising rate of land prices also started to decline annually towards the early 1980s. Thereafter, land prices stabilized nationwide. However, since 1984, when land prices in commercial districts of Tokyo started to rise, prices elsewhere continued stable. In 1985, the rise in land prices accelerated (the posted prices, official reference prices by the National Land Agency, of commercial districts in Tokyo rose 7.2% year to year in 1984, and 12.5% in 1985). Since then, land prices in Tokyo commercial districts has continued to rise at an more accelerating pace—in 1986 48.2%; in 1987 61.1%—far surpassing the 28.0% recorded in 1973, the highest in the past 20 years (Figure 1). The skyrocketing land prices in commercial districts spread gradually to surrounding residential areas, where the rate of price increase accelerated to 68.6% in 1987—exceeding the rate of increase in commercial districts. The escalation of land prices in metropolitan Tokyo also spread to other major cities, such as Osaka and Nagoya, where land prices in commercial districts started to rise from 1986 and accelerated in 1987, though not all over the country.

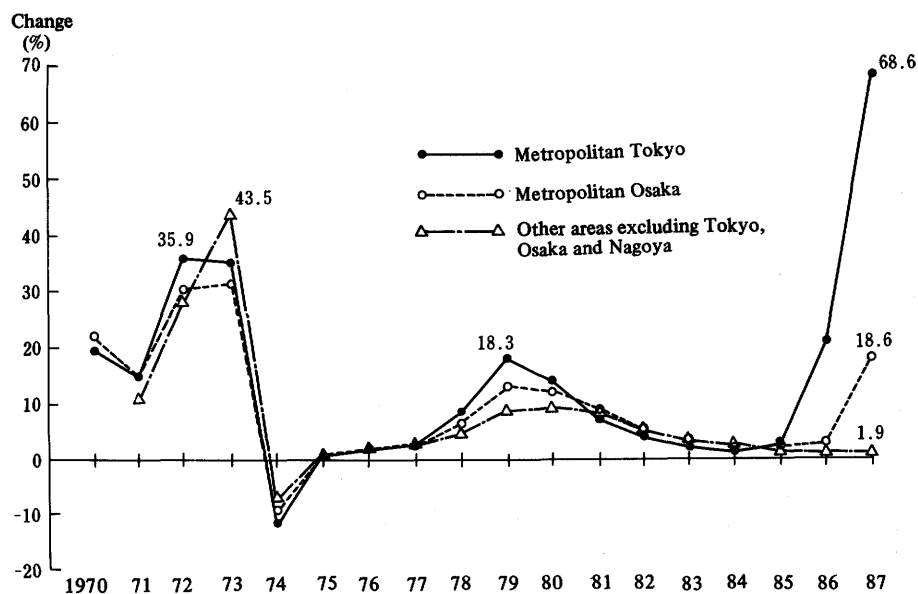
In the meantime, after the Plaza Agreement, Japan experienced recession caused by the substantial appreciation of the yen; from January 1986, the Bank of Japan reduced its official discount rate in five stages to 2.5% in February 1987. As a result, Japan's economy entered an era of historically low interest rates. This made cheap money available, which enabled corporations to engage in speculative financial investment ("zaiteku" or "money game") in the stock and real estate markets and, consequently, both the value of stocks and land surged spectacularly. Subsequently, from mid-1987 Japan's economy recovered rapidly. Around autumn 1987, the high growth of new housing starts in the private sector and the effect of large-scale public expenditures came to create fears of

Figure 1. Trend of Posted Prices of Land (% change from prior year)

< Commercial districts >



< Residential districts >

Source: National Land Agency, *The Posted Price of Land*.

“bottleneck” inflation; as a result, public clamour was heard demanding the government take appropriate measures to suppress skyrocketing land prices.

In response, the government took a series of emergency measures to quell rising land prices: (1) it revised the National Land Utilization Planning Law to establish special zones in which land transactions were subject to monitoring (August 1987);¹ (2) it demanded financial institutions exercise self-restraint in financing investors developing land (July 1987);² and (3) it introduced an additional heavy surcharge on capital gains obtained from very short-term trading (October 1987).³ Simultaneously, the government commenced studying the redevelopment of city centers, the development of land for housing, and the transfer of government agencies out of Tokyo in order to decentralize demand. Subsequently, perhaps because of the effect of these measures, the rising tempo of land prices has decelerated since mid-1987. In the fourth quarter of 1987, the average rate of rise in Tokyo turned slightly negative from the previous quarter (minus 0.2% in commercial districts and minus 0.8% in residential districts, according to a survey by the Tokyo prefectural government). This downward trend continued in 1988—in some areas prices are reported to have dropped 20-30%.

2. *Features of recent skyrocketing land prices*

Here we shall summarize features of recent skyrocketing land prices. First, they were initially seen with respect to land in the major commercial districts of metropolitan Tokyo (and major regional cities). The major factors behind this were as follows, accord-

¹The National Land Utilization Planning Law requires land transactions—except small lots—be registered with the local government. The purpose of this law is to prevent speculation on land harmful to the national economy. The government has newly designated areas where land prices have skyrocketed such as Tokyo, Osaka and Nagoya, as transaction monitoring areas—in such areas even small lots must be registered (in accordance with the recommendation of the Temporary Administration Reform Promotion Council, June 1986). Any land transactions where the prices are inappropriately high are subject to administrative guidance, requiring the seller to reduce the price to a government approved lower level. See the National Land Agency's report (1988) for information on “areas designated for monitoring” and the status of transactions registered and accepted.

²In July 1987, the Ministry of Finance held special hearings with financial institutions in order to obtain a clear understanding of their stance and method in financing companies active in purchasing or developing land. At the same time, the Ministry issued administrative guidelines requiring them to strictly adhere to the Ministry's objective of forestalling speculative investments in land. As a result, the growth rate of the outstanding loans and discounts of banking accounts of all banks granted to the real estate industry shrank by a large margin (the volume of loans dropped from a year-to-year increase of 36.6% in June, 29.5% in September, 16.8% in December 1987 to 10.2% in March 1988).

³For the purpose of suppressing land speculation, in addition to the measures cited in (2) above, the government revised the capital gains tax on land sales by imposing a heavy surcharge for less than two years holding. The special tax exemption from capital gains tax applied to the simultaneous sale and purchase of residential property by individuals, which was regarded as a factor spreading the escalation of land prices to surrounding districts, was also abolished in principle on April 1, 1988. In the meantime, the long-term holding period, which applied a lower rate than short-term holding, was reduced from ten to five years to promote an increase in the supply of residential land. (see Table 1).

Table 1. Revisions¹ of Capital Gains Tax on Land Sales (October 1987) — Summary

| | Holding periods | 2 years | | | Long term |
|--------------|-----------------|-----------------|--|--|-----------|
| | | 2 years | 5 years | 10 years | |
| Individuals | Before revision | Short term | | | Long term |
| | | 2 | 1 Capital gains from land sale × 40% (plus 12% inhabitants tax) 2 Surcharge on consolidated income × 110% | 3) Less than ¥40 million: 20% (plus 6% inhabitants tax) Amount exceeding ¥40 million: surcharge on 1/2 of consolidated income | |
| | After revision | Very short term | | | Long term |
| | | 2 | 1 Capital gains from land sale × 50% (plus 15% inhabitants tax) 2 Surcharge on consolidated income × 120% | Ditto | |
| Corporations | Before revision | Short term | | | Long term |
| | | 4 | Capital gains from land sale × 20% (plus regular tax on corporate income) | Regular tax on corporate income | |
| | After revision | Very short term | | | Long term |
| | | 5 | Capital gains from land sale × 30% (plus regular tax on corporate income) | Ditto | |

¹ This provision applies only to sales in the October 1, 1987 to March 31, 1990 period.

² Whichever of the two yields more tax.

³ Special exemption provided for amounts up to ¥30 million.

⁴ When corporate tax (42%), corporate inhabitants tax, etc. are added, 72.2%.

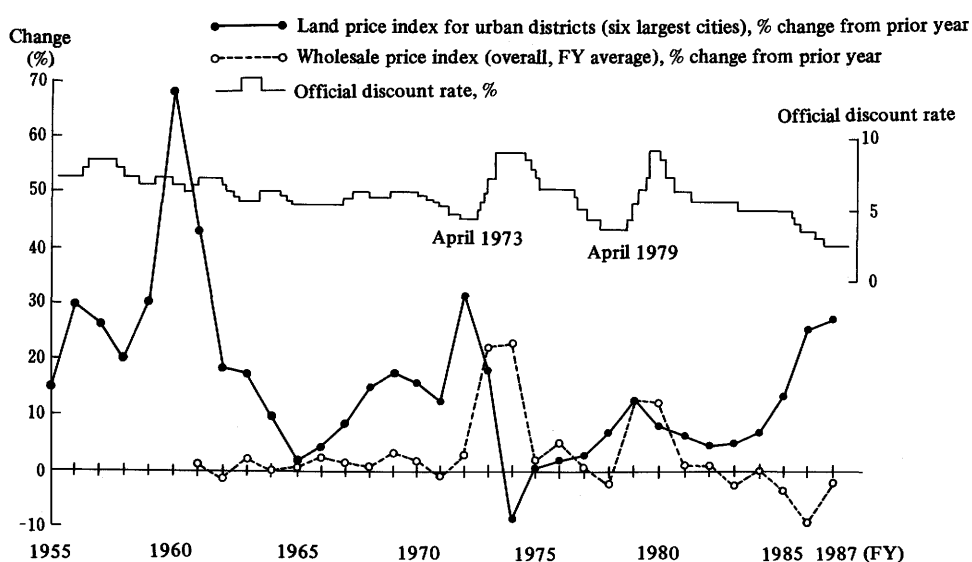
⁵ Same as above, except the latter figure becomes 84.45%.

ing to the National Land Agency's 1988 Report: "The progressive restructuring of industries or trend in the high-technology use of information and internationalization of businesses gave strong incentives to firms and financial institutions to concentrate more of their functions in a single location in central business districts, especially in Tokyo...; As a consequence, this trend has been accelerating the huge demand for real estate in Tokyo." In other words, the rapid structural change of Japanese industry is thought to have led to the latest land price hikes in commercial districts of metropolitans.

Second, there is the conspicuously extreme polarization of land price movements between metropolitan Tokyo and nonmetropolitan areas. In 1987, the posted prices of land for all usages in metropolitan Tokyo (by the National Land Agency) jumped 65.3%; in the meantime the average in local areas (except metropolitan Osaka and Nagoya) rose only 2.4%. We should take note of the fact that at no period in the past had this extreme spread in land prices between metropolitan Tokyo and other areas been witnessed.

Third, in the meantime, general price levels, including wholesale prices, have remained stable. In the past, an accelerating rise of land prices was accompanied by a concomitant rise in general price levels, at which time the government tightened monetary policy (the periods after April 1973 and April 1979, see Figure 2). However, in the recent instance, land prices went sky-high while, on the other hand, the effect of the appreciation of the yen, resulting from the Plaza Agreement, was very effective in stabilizing prices in general. This dilemma of the wide gap between surging land prices and

Figure 2. Long-term Trend of Land Prices, Wholesale Prices, and the Official Discount Rate



Source: The Japan Real Estate Institute, *Land Price Indexes of Urban Districts*.

stable general prices made it more difficult and complex for the authority to take monetary action.

B. Long-term trend of land prices and history of the land taxation system

Next, we shall review the long-term trend of land prices, and give a general summary of the history in the system of land taxation.

1. Long-term trend of land prices

The long-term trend of land prices since 1955 can be divided as follows. They have surged about four times—in 1960-61, 1972-73, 1978-80, and recently since 1985 (Figure 3). During the first hike of land prices that occurred in 1960-61, prices in industrial districts recorded the prominent rise. It suggests that they were caused by the extraordinary leap in demand from industrial corporations, which were enjoying a high rate of economic growth (Iwato Boom) (Figure 4).

After the recession which reflected the end of the boom accompanying the Tokyo Olympic Games, the Japanese economy posted double-digit growth in 1966-70. In this period, due to the short supply of land, land prices, especially those in residential districts, gradually turned upward. The next surge occurred in 1972-73, following the so-called "Nixon shock" of 1971 which created excess liquidity. Such excess liquidity, together with the boom created by Premier Tanaka's policy for "restructuring the Japanese Archipelago," spurred a nationwide speculative surge in land prices—led by corporate buyers. Land prices for every type of usage surged. This spectacular rise was halted by a policy curbing total demand initiated in April 1973, the revision of land taxes (explained later) aimed at suppressing land speculation, and the impact of the 1973 oil shock. The growth of real GNP in 1974 turned negative for the first time since the end of World War II; which led to a decline in land prices (the average for all urban districts dropped 4.3%).

Thereafter, land prices remained stable for a while. However, in 1978-80, the third surge occurred. This time it was the prices of residential land in major metropolitan areas that led the upsurge. This surge was due, in part, to inflation in the aftermath of the second oil shock; however, its major cause was the lack of residential land supply amid a housing construction boom (National Land Agency, 1980). The fourth, or most recent skyrocketing of land prices, commenced in 1985.

2. History of the land taxation system

We shall next review the history of the land taxation system. In Japan, land taxation was first employed in earnest as a means of national land policy in 1969 (as a result of a recommendation by the Tax Study Council's special subcommittee on land taxation in 1968). Since then, it has undergone major transformation in the following four periods: 1969-72, 1973-77, 1978-86, and 1987 (Table 2).

Figure 3. Trends of Land Prices and Real GNP (% change from prior year)

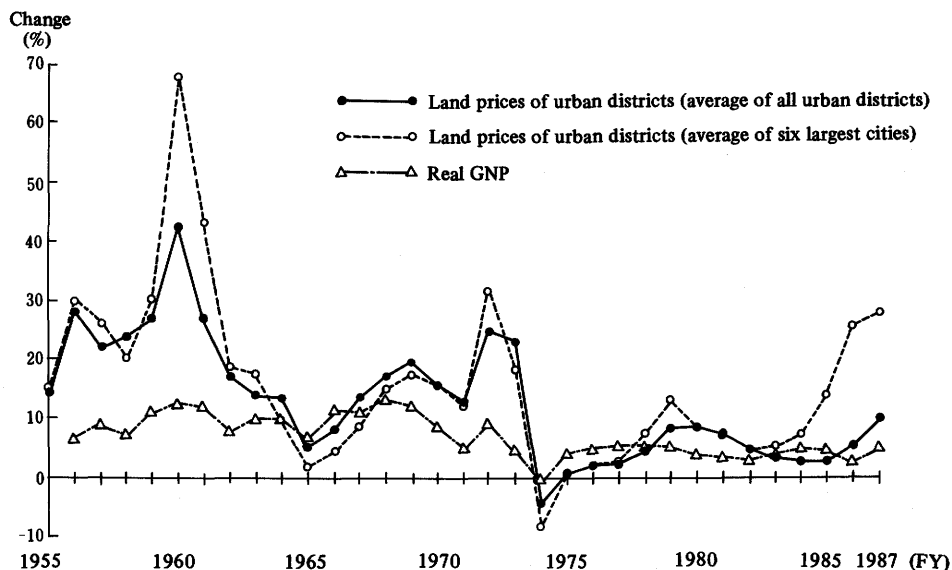
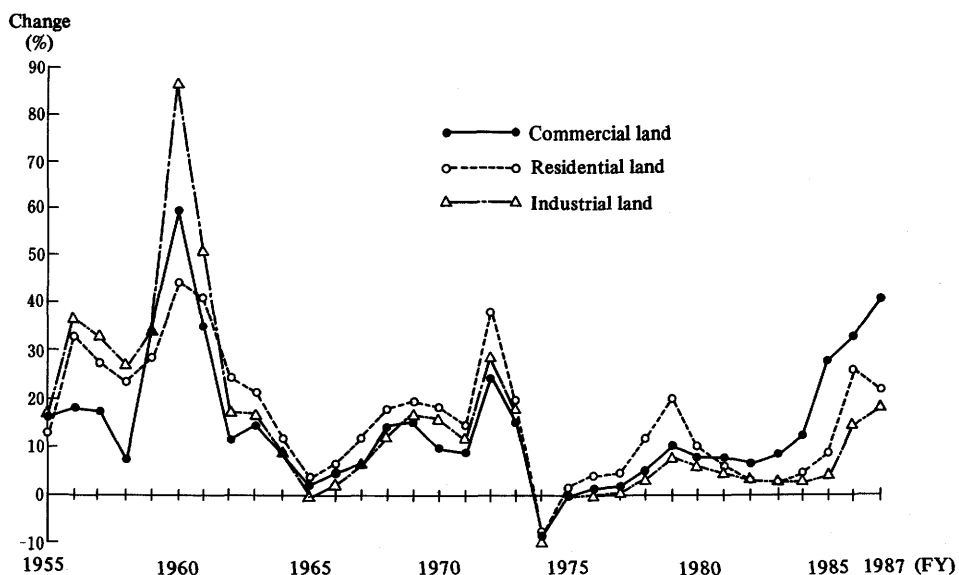


Figure 4. Land Prices Trends (six largest cities, classified by land utilization) (% change from prior year)



Sources: The Japan Real Estate Institute, *Land Price Indexes of Urban Districts*.
Economic Planning Agency, *National Accounts*.

Table 2. History of the Land Taxation System

| To encourage the supply of land owned by long-term holders – over five years (the first period) | | To promote the availability of high-grade land for housing (third period – first stage) | |
|---|--|---|--|
| 1969 | <ul style="list-style-type: none"> Individual capital gains tax on long-term holdings was switched from consolidated to separate taxation at a lower rate of 10 – 20%. Individual capital gains on a short-term trading was levied more heavily, namely the greater one out of either consolidated or separated at the rate of 40%. | 1978 | <ul style="list-style-type: none"> Taxation on corporate capital gains from land sales relaxed. Some regulations and limitations on land trading (for example limiting capital gains to less than 27% of the sale price of land), relaxed. Special holding tax of land reduced. Some exemption conditions introduced. |
| To suppress speculation by the corporate sector (the second period) | | 1979 – 80 | <ul style="list-style-type: none"> Individual capital gains tax on long-term holdings reduced. The upper limit of capital gains exempt from application of consolidated taxation was raised from ¥20 million to ¥40 million; also the ratio of consolidation into general taxable income, between ¥40 million and ¥80 million, was reduced from 3/4 to 1/2. |
| | | To establish a stable long-term land taxation system (third period – second stage) | |
| 1973 | <ul style="list-style-type: none"> Heavy surcharge on corporate capital gains imposed. In addition to regular tax on corporate income including capital gains from land sales, a surcharge of 20% was imposed on capital gains from land sales, even if there was a loss. A special tax on land holdings was established. Special holding tax was levied on the value of land at the rate of 1.4% and on the value of new acquisitions at 3%, using acquisition prices as measures of the basis of assessment. (However, property tax and real property acquisition tax is deducted from the special tax). | 1982 | <ul style="list-style-type: none"> Tax on individual capital gains from sale of land eased. The rate of consolidation of individual capital gains was reduced to 1/2 even for amount exceeding ¥80 million. The distinction of holding periods between long-term and short-term was extended from five to ten years in order to promote land sales. Special tax exemption for long-term owners of residential real estate on the simultaneous sale/purchase of his property established. Agricultural land located in urbanization promotion areas (heretofore taxed at a lower rate) taxed the same (high) rate as applied to residential land. Special holding tax raised. |
| 1975 | <ul style="list-style-type: none"> Individual capital gains tax on long-term holdings was enhanced. Tax rate on capital gains exceeding ¥20 million was increased. The former method of separate tax at 20% of capital gains was replaced by 3/4 of capital gains being consolidated into an individual's general taxable income with consolidated taxation being applied. | To suppress land speculation (fourth period) | |
| | | 1987 | <ul style="list-style-type: none"> Heavy additional tax on capital gains imposed to very short-term land trading (less than two years). The distinction between long and short-term holding is shortened to five years. The special tax exemption for buyers of their residential property abolished. <p>(For details, see Table 1)</p> |

Source: Takishima (1983); Tanaka (1983); Ministry of Finance, *Annual Reports*; National Land Agency, *Annual Reports*.

In the first period (1969-72), the government relaxed capital gains taxation which aimed at suppressing the surge in land prices by increasing effective land supply.⁴ As we have already seen, after the surge of land prices in 1961-62, the tempo of price rise gradually accelerated again in 1967-69 mainly in residential land. The 1969 revision of land taxation was implemented to promote the effective supply of land, especially by encouraging long-term owners of farmland in metropolitan areas to sell so as to meet increasing demand; the capital gains tax for long-term holders was reduced.

In the second period (1973-77), the government turned to intensify taxation on capital gains, which was aimed at curbing the rise of land prices by suppressing speculation. In the 1973 land-tax reform, to suppress land speculation by the corporate sector, the government imposed a heavy surcharge on corporate capital gains and also established the special tax on land holdings. Moreover, in 1975, in response to criticism that the previous relaxation of capital gains tax for long-term holders had the effect of expanding the inequality in the distribution of income, the government increased tax on long-term capital gains when selling prices exceeded ¥20 million.

In the third period (1978-86), with the recovery of the economy, land prices started to gradually go up again. The government again revised its land taxation policy. Namely, in 1978, the capital gains tax on corporate sales was partially reduced to promote the supply of high-grade residential land. In 1979-80, long-term capital gains tax on individual sales was reduced. In fiscal 1982, the tax system was revised substantially for the purpose of "establishing a tax system aimed at ensuring the stable long-term supply of land," and the capital gains tax on long-term holders was eased.

In the final fourth period (with the tax system revised in fiscal 1987), the government's land taxation policy again reverted toward suppressing speculation by raising capital gains tax—especially through a new heavier tax on very short-term trading.

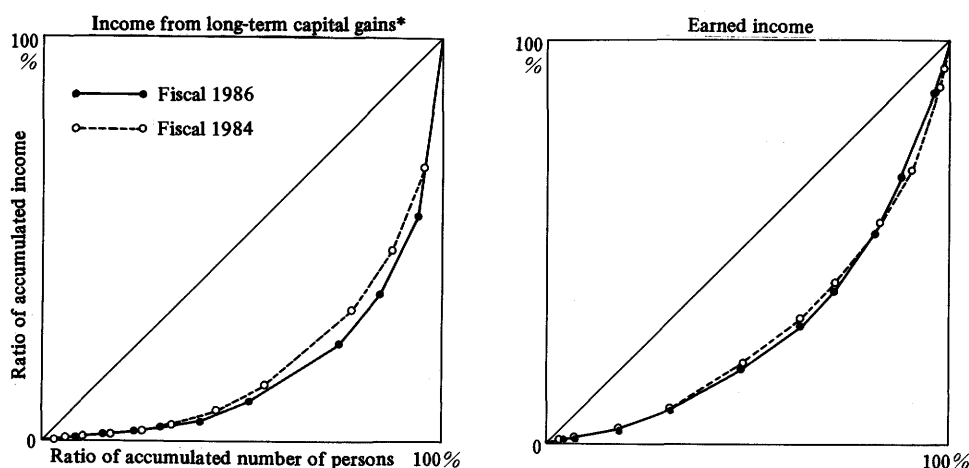
From the foregoing, it is evident that changes in the government's tax policy nearly paralleled the surges in land prices, and that tax policy played an important role in holding down escalating land prices. It should be noted that Japan's land prices escalated due to, in turn, insufficient supply and speculation, and that the government had to inevitably change its land taxation policy in order to cope with each stage of upsurge. From an objective viewpoint, it seems that the government was not quite able to suppress surges in land prices through taxation policy. This is sufficiently minded in the following analysis.

⁴As explained later, the heavy tax on capital gains has the effect of inhibiting (locking in) the sale of land. By reducing tax rates supply is promoted. At the same time, capital gains tax has served to suppress speculation, hence reducing tax rates has also had the latent effect of expanding speculation (see Section III.B. and Section IV.A.).

C. Issues arising from big hikes in land prices

Next, we shall study problems arising from skyrocketing land prices. The first is the increasing inequality of income distribution. As we have already seen, the latest upsurge in land prices has been abnormally great compared with the past few decades. This means that inequality between landowners and those who do not have land has been rapidly widening. Furthermore, the growing inequality between residents in major metropolitan areas and those in local areas, where land prices have remained relatively stable, cannot be ignored. Namekawa (1988) constructed a Lorenz curve to statistically demonstrate the growing inequity, where he represented capital gains with the rise of land prices by realized long-term capital gains. Employing the same method, we created a Lorenz curve for long-term capital gains (mostly from land sales) and earned income in fiscal 1984 and 1986, before and after the surge (Figure 5). The shape of the curve for earned income in both years is almost similar; in the meantime, no change in the distribution of earned income had occurred. On the other hand, the curve for long-term capital gains had shifted a step further outward from the 45-degree line (a condition where incomes of all individuals are completely equal); that is, inequality in this field had grown.⁵ Next, the

Figure 5. Income Distribution across Brackets (Lorenz curve)



Source: National Tax Administration Agency, *Annual Report*.

* Since it is difficult to completely extract capital gains on land sales from other sources, in this instance we use the long-term capital gains as a proxy for the distribution of capital gains from land sales (Namekawa, 1988).

⁵Statistics for fiscal 1987 were not available in time for this paper; however, it is natural to assume the curve will shift further outward. And the chart is focused only on the realized capital gains, so when taking unrealized gains into consideration, the skewness in income distribution should widen more.

Table 3. Distribution of Capital Gains across Areas*
(ratio of income from long term capital gains to total income)

| | 1980 | 1984 | 1985 | 1986 (fiscal year) |
|--------------------|------|------|------|-----------------------|
| Metropolitan Tokyo | 13.9 | 15.8 | 17.0 | 21.6% |
| Metropolitan Osaka | 11.8 | 11.2 | 11.7 | 12.8 |
| Local area | 11.5 | 11.5 | 11.4 | 11.9 |
| National average | 12.3 | 12.9 | 13.3 | 15.3 |

Source: National Tax Administration Agency, *Annual Report*.

* Data from National Tax office in each area.

Figures for local areas exclude data from metropolitan Tokyo, Osaka and Nagoya.

difference between metropolitan areas and others will be examined by comparing the ratio of capital gains to total income. The results shown in Table 3 indicate the existing impact of the polarization of land prices between them. Namely, in local areas—aside from the three major metropolitan cities, the ratio of capital gains income to total income had been at the 11% level since 1980; while the ratio for metropolitan Tokyo rapidly surged in fiscal 1984, 1985 and 1986. In fiscal 1986, the ratio was twice that for local areas (also the ratio for metropolitan Osaka was on an uptrend in fiscal 1986)—indicating that the differential across areas had expanded by a wide margin.

Next we shall focus on the efficiency of resource allocation. From the standpoint of efficiency, as far as land prices are set in response to changes in fundamentals (discussed in the next section), fluctuation of land prices is no problem. Nonetheless, violent fluctuation cannot be ignored because it could cause a serious misallocation of resources due to the particular features of land.

First is the difficulty in transforming its use. The cost of putting a current use of land to another (for example, construction of condominium) is exorbitant compared with the case of reshuffling a financial portfolio (physical and technological cost). Moreover, once an owner makes a contract to lease land, legal rights of the tenant (peculiarly skewed in favor of the tenant in Japan) would be fixed. These rights make it more difficult and costly for owners to terminate contracts without any conflicts with lessees protected highly (social and legal cost). Consequently, the short-term elasticity of land supply is considerably less than that of other resources. So, in many instances land may continue to be utilized in the same fashion even if it does not produce the economically maximum rent feasible. This high cost of converting usage gives speculators aiming at capital gains the incentive to keep their land uses less-intensive or unused, which means less cost when reselling. Hence, expectations of future rises of land prices probably serve to inhibit its possible intensive usage—a sort of obstruction effect for production (Komiya, 1975). This aspect is an important distinction from the case of stock speculation, and it constitutes a

peculiar need of governing the speculation in land. Moreover, when allocation (land use) is distorted by a temporary upswing in prices such as overshooting, the cost of accommodating allocation will ineluctably be far larger than that required for other kinds of resources.

The second is the matter of incomplete information. Unlike other goods and services, an integrated market for land is difficult to establish due to its heterogeneous nature. Most land transactions are thus conducted by cross trades on a personal basis. Moreover, the various official assessments and reference prices of land are disparate and unrealistic as indexes of actual prices, and these indexes are only statistical data that are out of date by several months to several years. Consequently, land prices are determined by each participant in a cross trade, based on incomplete information. Under such conditions there seems to be a considerable possibility of deviation from fundamentals. In addition, because of the protection of lessee rights, most of the transactions are in the form of selling property itself rather than leasing contracts. In other words, "land prices are not determined from rents, but rather from the direct trading of property itself. In this sense, there exists the greater possibility that land prices could trend away from the anchor, which is the present value of future rents" (Noguchi 1988).

III. Determination of Land Prices and Interaction with the Land Taxation System

In this section, a simple model will be employed to demonstrate the mechanism that determines land price and the impact of land taxes, such as property tax and capital gains tax, which have played important roles in government land policy.

A. Basic theory

The relationship between rent and land price will be examined as a starting point in considering the land pricing mechanism. Because land is a durable factor of production, there are two prices for it—the price for land services or land use (rent) and the price of land itself (land price).

The demand for land services is derived from the demand for the final product. Hence, the price (rent) is an imputed price based on the value of the marginal product. In other words, when the production function for the final product (x) is $x=f(T,K)$, where T represents land and K other factors of production, then a firm's profit (π) is:

$$\pi = P_x \cdot f(T,K) - (P_r \cdot T + P_k \cdot K) \quad (1)$$

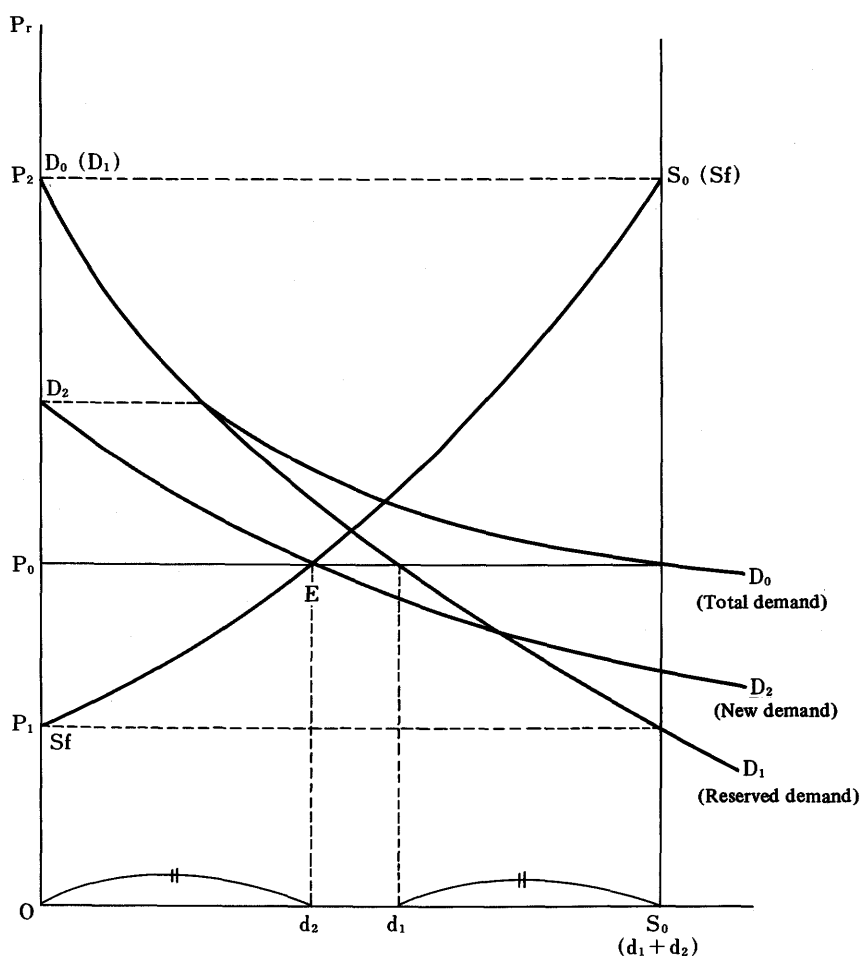
where P_x is the price of final goods. P_r and P_k are the prices of T and K respectively. The first order condition for maximization is

$$P_r = P_x \cdot \frac{\partial f}{\partial T} \quad (2)$$

This shows that the rent is determined as the value of the marginal product. If the production function satisfies the normal requirements of $f' > 0$ and $f'' < 0$, then the demand for land services is represented by a downward sloping curve (Figure 6, D_0D_0). Here, supply (endowment) is fixed and inelastic to its price (the supply curve is vertical— S_0S_0), which is a particular feature of land. Consequently, rent is varied solely by shifts in demand-side factors. Accordingly, the rent could rise only when the price of the final product or marginal productivity rises (through progress in production technology or an increase in K).

The vertical supply curve shows only the total amount of the stock of land services in the economy. Thus actual trade volume (flow) of land services cannot be known from it.

Figure 6. Supply and Demand for Land (Land Services)



Source: Iwata (1977).

In order to get a clear picture of the actual transaction amount in equilibrium, it is necessary to consider total demand for land (D_0D_0 in Figure 6) separated into new demand and reserved demand. Reserved demand (D_1D_1) is an owner's demand on his own land or land services for the purpose of his own use. On the other hand, new demand (D_2D_2) comprises demand for rental land and the landowner's additional demand. If rent is P_2 , reserved demand is zero (existing S_0 is all supplied). And, if the rent is less than P_1 , reserved demand occupies S_0 completely (actual supply of rental land is zero). In other words, the supply curve of land services is none other than S_fS_f , which is equal to the existing amount of land services (S_0S_0) minus reserved demand (D_1D_1). The flow equilibrium of supply and demand is given by the intersection (E) of S_fS_f (the decreasing demand curve of reserved demand) and D_2D_2 (the demand curve for new demand). And rent is determined by P_0 . Then new demand, d_2 , is equal to supply, which is S_0 minus d_1 .

Next, we shall examine how the price of land is determined. Land is an important object of portfolio investment as well as an essential factor of production. Hence, arbitrage conditions with other assets must be satisfied in order for land to be in demand. The sum of income gains (rent earnings) from land as a productive factor and capital gains from the holding as an asset must match the cost of holding (the opportunity cost of holdings). For simplicity, in the following we shall consider how an investor constructs a portfolio in a hypothetical economy consisting of two assets, land and bonds (or where all assets except land are completely substitutable). Let, P_t be the price of land, r_t rent, and ρ (a constant) the rate of return from other alternative assets, where subscription t represents period t . In order for land to be in demand, in any given period t the following conditions must be satisfied:⁶

$$(E_t P_{t+1} - P_t) + r_t = \rho P_t \quad (3)$$

where, the left-hand side of the equation represents the expected profits of land holding ($E_t P_{t+1}$ represents the expected price of land in period $t+1$ based on informations available in period t), and the right-hand side the opportunity cost of holding land.

Then, what determines the land price in each period? Let us consider the demand price of an investor who purchases land in period t and sells it in period $t+s$. From equation (3), equation (6) holds in the relation between P_t and P_{t+s} . By transforming equation (3), the following equation is obtained;

⁶This model explicitly incorporates expectations following the formulation of Komiya and Murakami (1972) and Komiya (1975), and omit risk premiums, transaction costs and taxes. Miyao (1987b), Noguchi (1988b) and Kanemoto (1988a) are also using the same kind of formulation. The above equation does not provide any explanation of the historical fact that the rate of return from land holdings has been higher (the left-hand side of the equation (3) has been larger) than that of other alternative assets (e.g. interest rate) on the average. However, when risk premiums, liquidity premiums and taxes are taken into account, the difficulty of explanation can be resolved.

$$P_t = \frac{1}{1+\rho} (E_t P_{t+1} + r_t). \quad (4)$$

If the same formation of expectations with respect to land prices is assumed in the following periods, then we get

$$E_t P_{t+1} = \frac{1}{1+\rho} (E_t P_{t+2} + E_t r_{t+1}) \quad (5)$$

for period $t+1$. P_t can be calculated from the following equation by solving equation (4) in the forward-looking way:

$$P_t = \frac{E_t P_{t+s}}{(1+\rho)^s} + \sum_{i=0}^{s-1} \frac{E_t r_{t+i}}{(1+\rho)^{i+1}}. \quad (6)$$

Current land price is determined as the expected price at the time of future selling plus the discounted present value of the expected rental stream during possession. When the process of equation (5) is extended infinitely ($s \rightarrow \infty$), under the condition of

$$0 < 1/(1+\rho) < 1$$

and, if $E_t P_{t+s}$ is bounded, that is:

$$\lim_{s \rightarrow \infty} [E_t P_{t+s} / (1+\rho)^s] = 0$$

the following equation is derived:

$$P_t = \sum_{i=0}^{\infty} \frac{1}{(1+\rho)^{i+1}} E_t r_{t+i}. \quad (7)$$

Namely, the current land price can be represented only by the flow of rental income in the future (fundamentals). Furthermore, assuming that rent would rise at a constant rate, α (where $\alpha < \rho$):⁷

$$r_{t+s} = (1+\alpha)^{t+s-1} r_t$$

then the above equation can be simplified as follows:⁸

⁷When a steep rise in land price promotes land-saving technological progress, the growth rate of rent, α , may become zero or even negative. Nonetheless, the nominal rent may go up along with rises in prices of final products, or by the increased input of other factors (by the increase in their marginal productivity). Here, for simplicity a constant growth path (α) of nominal rent, r , is assumed and, as in the case of footnote 6, $\alpha < \rho$ is assumed by considering risk premiums, liquidity premiums, etc. implicitly.

⁸This equation's result is easily shown in Figure 6, where the demand curve for land services was drawn according to:

$$r = P_x \cdot \partial f / \partial T \quad (f' > 0, f'' < 0).$$

The demand curve for the stock of land can also be shown by a downward sloping curve by substituting $P_x \cdot \partial f / \partial T$ for r_t in equation (8). This means that the above argument still holds in the case of land price. In

$$P_t = \frac{r_t}{\rho - \alpha} \quad (8)$$

However, the solution to equation (7) and (8) is not unique because equation (7) is a special solution based on the assumption that land price at each period consists only of the flow of rents in the future (fundamentals). According to equation (3), it cannot be denied that land price may deviate from the fundamental price—equation (7). Namely, if expectations that demand will increase in the next period for some reason and that capital gains could be generated are formed, land price may deviate from the anchor (the fundamental price) due to speculative bubbles.

According to Okina (1985), this can be explained as follows. Assume that pure speculation makes land price in period $t+1$ deviate from the fundamental price ($E_t \bar{P}_{t+1}$) by $E_t C_{t+1}$. Then,

$$E_t P_{t+1} = E_t \bar{P}_{t+1} + E_t C_{t+1} \quad (9)$$

Under rational expectations, expectations of capital gains in period $t+1$ induce speculations in period t . Consequently, supply and demand equilibrium for land is no longer obtained in period t . The anticipated change in the price of land will be self-fulfilled in the current period

$$P_t = \bar{P}_t + C_t \quad (10)$$

Hence, the actual price deviates from the fundamental price. From equations (3), (9) and (10) we get

$$C_t = \frac{1}{1+\rho} E_t C_{t+1} \quad (11)$$

Moreover, if investors are convinced that pure speculation will continue over periods (i.e. the probability of a crash is zero, the deterministic bubble), then the growth path of the bubbles can be expressed by

equation (8) we do not distinguish between reserved demand and new demand; however, according to the usual Slutsky's equation, reserved demand is more inelastic than new demand. So in Figure 6, the slope of reserved demand is drawn more steep. Let us consider the substitution effect and wealth effect when land price rises. In equation (3), when P_t rises, the substitution effect reduces the demand through the decrease in the expected profits (left hand side of the equation). For the landowner (or reserved demander), this also means an increase in the value of his assets; and whose wealth effect raises demand (while the wealth effect is negative for the new demander). In other words, for the new demander, both the substitution effect and wealth effect work in the same direction. On the other hand, in the case of the reserved demander, the two effects cancel out and the change in demand would be small. For more details, refer to Iwata (1977), who constructed a model for the investor portfolio selection between land (risky asset) and deposits (safe asset).

Furthermore, the effect of taxation (such as lock-in effect of capital gains tax, discussed later, which inhibits land supply) and the difficulty in converting land use caused by the aforementioned law on leasing land and rental housing—are important factors that make reserved demand inelastic.

$$C_{t+1} = (1+\rho)C_t. \quad (12)$$

This indicates that once a bubble is created, it will grow explosively. This bubble factor cannot readily be disregarded in explaining the rising process of land prices, which is described as the "myth of land prices".

B. Effect of taxation on land prices

In the foregoing section, the effects of land taxes such as property tax and capital gains tax on land sales were ignored. However, in reality the tax system is a crucial factor that affects investor portfolio decisions. As described in Section II, in Japan the land tax system has played an important role in suppressing the escalation of land prices. In the following, we shall examine the effects of land taxation, using the basic model described above.

1. The property tax

First, we shall consider the property tax, where the tax is imposed on the current value of land at the constant rate θ . The arbitrage condition is rewritten as

$$(E_t P_{t+1} - P_t) + r_t - \theta P_t = \rho P_t. \quad (13)$$

Hence, the current land price, P_t , can be expressed by:

$$P_t = \frac{E_t P_{t+s}}{(1+\rho+\theta)^s} + \sum_{i=0}^{s-1} \frac{1}{(1+\rho+\theta)^{i+1}} E_t r_{t+i}. \quad (14)$$

Here, we disregard the possibility of the bubble and take s into the infinite, and assume:

$$\lim_{s \rightarrow \infty} [E_t P_{t+s} / (1+\rho+\theta)^s] = 0,$$

$$r_{t+s} = (1+\alpha)^{t+s-1} r_t,$$

then equation (14) can be simplified as follows:

$$P_t = \frac{r_t}{(\rho - \alpha + \theta)}. \quad (15)$$

In other words, the investor's demand price for land will be lower than if the tax did not exist ($P_t = r_t / (\rho - \alpha)$). The demand curve for land shifts downward. Where the supply curve is vertical, the tax burden is completely capitalized, and the land price is reduced by the present value of future tax payment, $r_t \theta / ((\rho - \alpha)(\rho - \alpha + \theta))$, (negative capitalization).⁹

⁹Here, it is assumed that under a vertical supply curve the tax burden is fully capitalized. According to Feldstein (1977), however, when an individual attempts to maintain his lifecycle wealth—comprising land and capital—at a given constant level, the price of land will drop in the short run, but there exists the possibility that it would rise again in the medium and long run. Namely, the reduction in his lifecycle wealth caused by the fall in land price (the tax is fully capitalized in the beginning) promotes the accumulation of capital, which will be

2. Capital gains tax¹⁰

Next we shall examine the effect of the capital gains tax on land price. First, when only realized capital gains are taxed, then land price, P_t , can be expressed as:

$$P_t = \sum_{i=0}^{s-1} \frac{r_{t+i}}{(1+\rho)^{i+1}} + \frac{E_t P_{t+s} - \theta(E_t P_{t+s} - P_t)}{(1+\rho)^s}. \quad (16)$$

The demand price of investors, who buy land in period t and sell it in period $t+s$, will be lower by the present value of tax payments in period $t+s$, $\theta(E_t P_{t+s} - P_t)/(1+\rho)^s$.¹¹ However, in this instance, the rental earnings term doesn't change (the first term on the right side of the equation). Hence, in the case of perpetual holding (such as corporate holdings), the effect of the tax would be completely avoided. Moreover, since an individual who inherits in the form of land would only be subject to inheritance tax, he also could avoid tax on accumulated capital gains.

In order to analyze the characteristics of the second term on the right-hand side of equation (16), we shall consider two types of investors: (1) Investor A buys land in period t and sells after holding for $m+n$ periods. (2) Investor B buys land in period t and sells in period $t+m$ (holding for m periods) and purchases other land. Finally, after holding the latter for n periods he sells again (see Namekawa 1988). Assuming prices of all categories of land increase at the same rate (g , a constant), we can compare the present value of tax payments (T) by investors A and B. For investor A (who holds the land continuously), the present value of his tax burden would be:

$$T^A = \frac{\theta(P_{t+m+n} - P_t)}{(1+\rho)^{m+n}} = \frac{\theta P_t}{(1+\rho)^{m+n}} [(1+g)^{m+n} - 1]. \quad (17)$$

On the other hand, for investor B who makes another purchase in period $t+m$,

$$T^B = \theta \left[\frac{P_{t+m} - P_t}{(1+\rho)^m} + \frac{P_{t+m+n} - P_{t+m}}{(1+\rho)^{m+n}} \right]$$

accompanied by a reduction in the marginal productivity of capital (i.e. a lowering of ρ); and this would make land prices turn up again. Nonetheless, even in this instance when the investor's bequest motive is taken into consideration, the tax burden would be completely capitalized (Calvo, Kotlikoff and Rodriguez, 1979).

¹⁰The effect of inheritance tax is the same as that of the capital gains tax. When the inheritance is made in period $t+s$, then,

$$P_t = \sum_{i=0}^{s-1} \frac{r_{t+i}}{(1+\rho)^{i+1}} + \frac{1-\theta}{(1+\rho)^s} E_t P_{t+s} \quad (16)'$$

The current demand price of land will be reduced by an amount equivalent to the discounted value of the inheritance tax, $\theta E_t P_{t+s}$, at the time of inheritance.

¹¹However, since equations (16) and (16)' are not in reduced forms, it is not possible to strictly pinpoint the effects of the tax on land prices from these. Kanemoto (1988b) derives reduced form equations in stationary states by using an overlapping generation model which incorporates land inheritance and he demonstrates that property, capital gains, and inheritance taxes all lower land prices.

$$= \theta P_t \left[\frac{(1+g)^m - 1}{(1+\rho)^m} + \frac{(1+g)^{m+n} - (1+g)^m}{(1+\rho)^{m+n}} \right]. \quad (18)$$

The difference between them would be:

$$T^B - T^A = \frac{\theta P_t}{(1+\rho)^{m+n}} [(1+g)^m - 1][(1+\rho)^n - 1] > 0. \quad (19)$$

This shows that replacing the sale of land by another purchase increases the real tax burden. For both investors respective capital gains from holding land for $m+n$ periods are the same $P_t[(1+g)^{m+n} - 1]$. However, investor B pays tax $\theta P_t[(1+g)^m - 1]$, which is imposed on capital gains generated during possession of the previous m periods, by selling his land and realizing capital gains in period $t+m$. In contrast, investor A defers tax payment (equal to $\theta P_t[(1+g)^m - 1]$) for n periods by continuing to hold land.

Let us write the period $t+m+n$ value of the tax on capital gains during period t and $t+m$ $P_t[(1+g)^m - 1]$ as,

$$T = \frac{\theta P_t[(1+g)^m - 1]}{(1+\rho)^{m+n}}.$$

By using this, equation (19) can be rewritten:

$$T^B - T^A = (1+\rho)^n T - T.$$

This implies that investor A, who does not sell land in period $t+m$, can get $[(1+\rho)^n - 1]T$ as additional investment profit (benefit from deferred payments) by putting off his tax payment T (which would otherwise be lost in period $t+m$) over n periods.

Thus, under the realized capital gains tax the real burden of the tax is lowered ($T^A < T^B$) as the length of land holding is prolonged. In other words, realized capital gains tax has the effect of suppressing land sales by favoring long-term possession.¹² This is the lock-in effect of realized capital gains tax. It can also be discerned from the above equation that the lock-in effect is stronger if (1) the tax rate is higher and (2) the increase in land prices or accumulated capital gains ($[(1+g)^m - 1]$) is larger.

Next, we shall consider the case where unrealized capital gains are also taxed. In this case the capital gains for each period are subject to taxation. Consequently, the benefit of deferring land sales (deferral tax payment) is lost and the lock-in effect can be avoided.

¹²Here, the nominal rate of capital gains tax is taken as a constant but, in order to discourage land speculation, the actual capital gains tax included a surcharge or much higher rate on short-term holdings which resulted in reinforcing the lock-in effect. However, the lock-in effect is not effective with respect to the special tax exemption on the simultaneous sale/purchase of residential property. This is why this tax exemption is thought to be one of the causes accelerating price hikes in the suburbs of major metropolitan areas (e.g. it induced landowners to sell land in the center of Tokyo and then to purchase in the suburbs).

The arbitrage condition vis-à-vis other assets, equation (3), under unrealized capital gains tax, is rewritten as:

$$(1-\theta)(E_t P_{t+1} - P_t) + r_t = \rho P_t, \quad (20)$$

$$P_t = \left(\frac{1-\theta}{1-\theta+\rho} \right)^s E_t P_{t+s} + \frac{1}{1-\theta} \sum_{i=0}^{s-1} \left(\frac{1-\theta}{1-\theta+\rho} \right)^{i+1} E_t r_{t+i}. \quad (21)$$

Again by taking s into the infinite with $\lim_{s \rightarrow \infty} (\text{first term in the equation}) = 0$ and $r_{t+s} = (1+\alpha)^{t+s-1} r_t$, then

$$P_t = \frac{1}{1-\theta} \sum_{i=0}^{\infty} \left(\frac{1-\theta}{1-\theta+\rho} \right)^{i+1} (1+\alpha)^i E_t r_{t+i} = \frac{r_t}{\rho - \alpha + \alpha\theta} \quad (22)$$

is obtained. As in the case of property tax, the demand price for land declines.

C. Effect of taxation on land utilization

As in the foregoing, the demand price for land declines through capitalizing the tax burden. So far, our discussions are based on the assumption that the future stream of rent is given $[r_{t+s} = (1+\alpha)^{t+s-1} r_t]$. However, at any time, a landowner can virtually decide to utilize his land in another way to obtain higher rent. He would decide timing in order to maximize its present value. We shall now examine the effects of tax on land utilization according to Bentick (1979).

Let us imagine two alternative ways of utilizing land—the first continually generates uniform earnings (project 1) and the other (project 2) a yearly rental of c (where $c > 1$) after a gestation period of T .¹³ Gestation periods generally mean the time from the initial period of investment to the stage in which it begins to produce fruit. In this case, the cost of each project is omitted (or present discounted values of the cost of both projects are assumed to be equal). Thus, the investment in (or started from) the current period and that in T periods later are indifferent. In other words, project 2 includes a possession of unused land in the expectation of future rise of rent and a speculative holding for capital gains. Assuming that the discount rate is ρ (exogenous), the present value (PV) of each is as follows:

$$PV_1 = \frac{1}{\rho}, \quad (23)$$

$$PV_2 = e^{-\rho T} \cdot \frac{c}{\rho}. \quad (24)$$

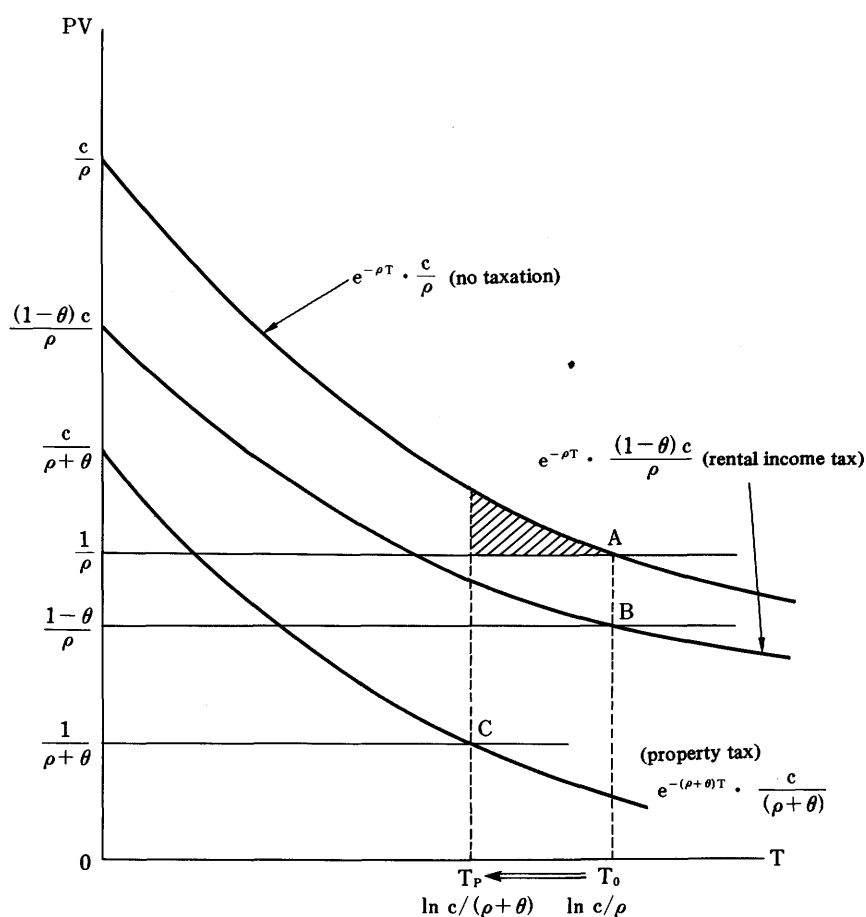
The implications of these two equations are the same as those in equations (7) and (8).

¹³The cost of converting land utilization is assumed to be infinite (i.e. the alternative usages are considered mutually exclusive), and the growth of rent and uncertainty are not taken into consideration.

They represent the investor's demand price for land; and both are based on arbitrage condition with other assets through ρ . In Figure 7, the vertical axis gives the present value of each project; the horizontal axis measures time. PV_1 is a horizontal straight line ($1/\rho$); PV_2 is a downward sloping curve that intercepts c/ρ (whose present value becomes smaller as the gestation period T becomes longer). At $T_0 (= \ln c/\rho)$ the value of the two are indifferent. When the gestation period is shorter than T_0 , project 2 will be chosen and, when longer, project 1 becomes the investor's choice.

Next, we shall consider effects of taxation. First, in the case that each year's rental income is subject to tax (at the rate of θ), the tax burden in project 1 will always be a constant θ . In the case of project 2, the tax will be θc after period T , and during period

Figure 7. Effect of Tax on Land Utilization Decisions



Source: Bentick (1979).

Note: Here the curves for $(1-\theta)/\rho > 1/(\rho+\theta)$ (i.e. $1-(\rho+\theta) > 0$), are charted. However, when $1-(\rho+\theta) < 0$, the order of size of T still remains valid.

$0 < t < T$, the land will not be taxed. As a result, the present value of both projects will be reduced as follows, respectively:

$$\begin{aligned} PV_1 &= (1-\theta)/\rho, \\ PV_2 &= (1-\theta)c \cdot e^{-\rho T}/\rho. \end{aligned}$$

However, the relative value of those projects will not be changed by the tax. Hence, the critical value of T is the same as in the case without taxation ($\ln c/\rho$)—tax is neutral to land use.

Then what effect would the property tax (with rate of θ) have? Let $W(t)$ be the value of land at period t without tax, and $V(t)$ be the value after tax is imposed. Given the assumption that the tax burden is fully capitalized, the relationship between $W(t)$ and $V(t)$ will be

$$V(t) = W(t) - \int_t^\infty \theta V(\tau) \cdot e^{-\rho(\tau-t)} d\tau. \quad (25)$$

The second term on the right side of the equation is the present value of the tax burdens to be paid in the future. In the case of project 1, since $W(t)$ is a constant at the level of $1/\rho$ (and consequently $V(t)$ will also be a constant), equation (25) can be simplified as follows;

$$V = -\frac{\rho}{\rho+\theta} W. \quad (26)$$

In other words, the present value of project 1 after tax would be reduced to $1/(\rho+\theta)$, so the horizontal line in Figure 7 would shift downward. On the other hand, during period $0 < t < T$, the value of project 2 would be

$$W(t) = \frac{c}{\rho} \cdot e^{-\rho(T-t)}.$$

In this case, $V(t)$ would become:

$$V(t) = \frac{\rho}{\rho+\theta} \cdot \frac{c}{\rho} \cdot e^{-(\rho+\theta)(T-t)} \quad (27)$$

and its present value, when $t=0$, would be:

$$V(0) = \frac{c}{\rho+\theta} \cdot e^{-(\rho+\theta)T}. \quad (28)$$

In other words, an imposition of property tax would lower the present value of both projects, just as a rise in rate of return in alternative assets ($\rho \rightarrow \rho+\theta$) would do. In this case, the gestation periods (T_p) would be $\ln c/(\rho+\theta)$, lower than $\ln c/\rho$ before the imposition of tax. This means that the property tax has a disadvantageous effect on investments that require longer gestation periods; as a result, projects with gestation periods of $T_p < T < T_0$ (the shaded area in Figure 7) would be rejected.

Now, how should the above result be interpreted? In Japan, there exists the traditional opinion that taxation policy should be assigned to promote the intensive utilization of land. It is virtually confirmed that the property tax has the effect of promoting the utilization of land by making investments with a long gestation period, including non-utilization, disadvantageous.¹⁴ However, if this policy were to lessen the possibility of better utilization (higher rent) in the future by forcing the earlier development, it would only have the effect of boosting land prices in the future. In fact, Bentick (1979) and Skouras (1978) conclude that "the tax on property is undesirable because it distorts the intertemporal optimization of resource allocation."

Here, it is important to note that whether the tax rate (θ) is appropriate or not must be evaluated in comparison with the rate on capital goods. As mentioned above, the effect of the property tax on land becomes evident as if the discount rate is increased ($\rho \rightarrow \rho + \theta$). Consequently, if all capital goods were equally taxed and the discount rate ($\rho + \theta$) was also applied equally, this would be equivalent to the ρ in equations (23) and (24) having increased exogenously. In such cases, changes in land use in response to taxation at rate θ improve the allocation of resources, while no changes distort it. Namely, taken into account that the same tax rate (θ) is imposed on other capital goods, point C in Figure 7 must be reconsidered representing optimal land use after taxation. However, in Japan, the effective rate of property tax on land such as agricultural and residential land is substantially lower than those on commercial land, buildings and so on because of many special measures for lightening tax burden. Consequently, the utilization of land has possibly shifted far to the right of optimum point C. In other words, in Japan it can be said that "investments with excessively long gestation periods are chosen, or the excessive amount of land is left unused or less-efficient" (Noguchi 1981a).

IV. Issues Arising from the Land Taxation System—Interaction with the Recent Skyrocketing Land Prices

In the foregoing, we have clarified the mechanism of land pricing and the effect of taxation. In this section, we shall focus on problems of Japanese land taxation and examine the background to recent big rises in land prices, based on the foregoing results. We shall also consider a desirable taxation system for land.

A. Problems of land taxation system in Japan

The desirability of the land taxation system must be evaluated in the context of overall taxation system. In the following, we shall examine problems with respect to land

¹⁴Noguchi (1981a) extended the Bentick model to demonstrate the case where rent is dependent on amount of land allocated for its use, and also the case where the timing of land development (or gestation period) could be freely chosen, and derived the same conclusion as Bentick did.

taxation bearing the relationship with other taxes in mind.

First, in discussing land taxation, it is necessary to point out the great variety of land prices and their poor validity. In Japan, there is a multiplicity of reference prices on land such as market prices, posted prices by the National Land Agency, assessments for property tax, and that for inheritance tax. Land has several prices and each tax is levied based on a different assessment (Table 4).

Second, and more important, is that the reassessment or upward valuation of land has repeatedly been suppressed since the second half of the 1950s in order to mitigate the increasing tax burden accompanying land price rises, meaning that all assessed values are far less than actual market values.¹⁵ This has been a factor enhancing the demand for land. In other words, the holding cost (i.e. the property tax), which should serve as the intrinsic benchmark for determining supply and demand or its utilization, has been set too low (assessed 10-30% of the market prices; the effective rate of property tax < nominally 1.4% > is reduced to only 0.1-0.4%).¹⁶ Consequently, it has had the effect of hindering more intensive utilization. As we have already seen, the property tax should let land prices go down through capitalizing the tax burden. However, in Japan, such a low effective rate of tax has had the reverse effect of pushing land prices up.¹⁷

Third, there is a problem related to inheritance tax. Inheritance tax on financial assets, such as stocks, bonds, etc. is assessed at market price, while, on the other hand, land is assessed at an extremely low rate of its market value (40~50%). Because of this disparity between land and financial asset assessment, one can lower taxable income by raising the proportion of land in one's estate, which has had the effect of raising the demand for land.^{18,19} People who sold land before their inheritance would be forced to

¹⁵For instance, because real property is reassessed every three years, the property tax levied in fiscal 1988 is based on the assessment made in July 1986. The upsurge in land prices since then will not be taken into account until the next reassessment in 1991. Moreover, the rate of increase in assessment has been suppressed far below the actual price increase. According to Noguchi (1988a), the actual price of residential land in Tokyo increased 2.3-fold in the July 1985 to July 1987 period, while, due to the time lag inherent in the official reassessment process, the suppression of increase in the assessment and provisions for alleviating the tax burden, actual assessment in the first year had only been raised 10% (Table 5).

¹⁶The effective rate of property tax in the U.S. is said to be five to ten times higher than in Japan (Miyao 1987c).

¹⁷Assuming the validity of equation (15) and that $\rho=6\%$ and $\alpha=4\%$, when cases with a tax rate (θ) of 1.4% and 0.4% are compared, the demand price for the latter would be approximately 1.4 times that for the former.

¹⁸Kanemoto (1988b) studied the effect of inheritance tax, using a Barro-type overlapping generation model comprising four kinds of assets—land, stocks, bonds, and real capital. He pointed out the possibility that the asymmetricality of assessments had made land prices higher through the tax saving effect.

¹⁹In Japanese inheritance tax, debt is deducted from taxable income—this saving effect also makes individuals willing to increase borrowings and purchase real estate more than otherwise would be the case. And, under current income taxation, interest payments on the debt as well as depreciation are also deductible from rental income. Hence, one can diminish gross taxable income by the larger interest payment on the larger debt. This fact is often regarded as a factor behind the great increase in the construction of rental condominiums in the past two years.

Table 4. Assessed Values of Land and Applicable Taxes

| | Rate of assessment, % | Applicable tax |
|---|-----------------------|------------------------|
| Market prices | 100 | Capital gains tax |
| Posted prices by the National Land Agency | 70 ~ 80 | — |
| Assessment for inheritance and gift tax | 40 ~ 50 | Inheritance & gift tax |
| Assessment for property tax | 10 ~ 30 | Property tax |

Source: Tanaka (1983).

Table 5. Rate of Increase in Property Tax by Factor (Tokyo)

| Factor | Multiple rate | Change in the effective tax rate |
|--|---------------|----------------------------------|
| When the tax reflects an actual rise in land prices ¹ | 2.30 | 1.00 |
| As a result of time lags ² between periodical reassessments | 1.26 | 0.54 |
| As a result of suppression of increase in the reassessments | 1.16 | 0.50 |
| As a result of a special measure for alleviating the tax burden (for the first year) | 1.10 | 0.48 |

Source: Noguchi (1988).

¹ Rate of change for residential land in Tokyo for the July 1985 through July 1987 period.

² Rises in land prices until July 1986 only taken into account.

pay both capital gains tax and inheritance tax, while, those who inherited in the form of land can avoid the former (capital gains accumulated so far can escape taxation).²⁰ This effect also severely inhibits them from selling their land, especially in Japan where the tax rate on capital gains is high.

The fourth problem is the high rate of capital gains tax and the discriminatory taxation between holding periods (a higher rate for short-term, and a lower one for long-term). In the U.S. and Europe, only a few countries—West Germany, France, etc.—discriminate its rates with respect to holding periods in imposing capital gains tax (Miyao, 1987c); two countries even define short-term as less than two years, which is considerably shorter than the case in Japan (Table 6) and the tax rates are at most only 30%. In contrast, for the purpose of suppressing speculative demand for land, capital

²⁰In order to prevent this, at the time of inheritance, the capital gains should be taxed as though they had been actually realized, and the amount subject to capital gains tax be deducted from inheritance taxation. This method of taxing has been used in Britain since 1965 (Komiya 1975 and Komatsu 1980).

Table 6. Capital Gains Taxation in Major Industrial Countries

| | |
|------------------|---|
| Japan | Land held for less than ten years used to be defined as <u>short-term</u> holding and any ensuing capital gain was heavily taxed. In 1987, the long-term holding period was shortened to five years (the capital gains tax on five to ten year holdings was reduced). However, on the other hand, a heavy surcharge was imposed on holdings of less than two years – defined as <u>an very-short term</u> . |
| U.S.A. | Holdings of less than one year used to be defined as short-term; only long-term capital gains were eligible for a reduced rate while capital gains on short-term holdings were subject to consolidated taxation. However, the 1986 tax revision abolished the special treatment for long-term holdings and <u>the same taxation</u> is now applied to both long- and short-term holdings. |
| U.K. | From 1962 only short-term (less than three years) capital gains were taxed. Then, in 1965, the period was reduced to one year, and the long-term gains were separately taxed at 30% and the short-term gains were subject to consolidated taxation. Since 1971 both short- and long-term holdings have been taxed <u>at the same rate</u> . |
| West Germany . . | All capital gains are, in principle, tax exempt, except gains stemming from speculation and the transfer of businesses rights. Gains from holdings of <u>over two years</u> are <u>exempt from the tax</u> . |

Sources: Komatsu (1980); Japan Certified Public Accountants Association (1988); National Land Agency (1988).

gains from short-term trading (less than ten years, or less than five after the 1987 revision) are heavily taxed in Japan. As we have already seen, the capital gains tax has a lock-in effect on land supply. In equations (17) and (18), the amount of the capital gains tax is not dependent on the length of holding period, and long-term holders benefit only from the reduced discounted value of tax burden by deferring tax payment on unrealized capital gains. Under the Japanese tax system, in which the tax rate in equation (18) is considerably higher than that in equation (17), the nominal amount levied on short-term holders itself becomes much larger. Hence, the lock-in effect of the capital gains tax is being reinforced to a considerable extent.²¹

So far, we have pointed out four problems with respect to the taxation of land in Japan. Here, we must additionally point out that a vital relation exists between lock-in effect and price of land. Japan's land prices have posted big hikes several times, e.g. in 1960-61, 1972-73, 1978-80, and recent two years. Nishimura (1987) attributes these upsurges to the strong lock-in effect of Japan's land taxation system. He argued that "land

²¹So far we have called the effect represented by equation (19) as the lock-in effect on realized capital gains tax. In the following, we define all factors that hinder land sales as lock-in effects in a broader sense—hence the effects of heavy taxation on short-term capital gains and the asymmetry of assessments between assets for inheritance tax and so forth, are now included.

prices have remained stable for relatively long periods of time, in contrast, periods of instability have been short and punctured by violent upsurges." He explains this pattern of land price movement which is "foreign to the image of the financial assets market" as a "trapped-fund model" resulting from the lock-in effect.

As already explained above, Japan's capital gains tax is substantially higher than those in the U.S. and Europe and, moreover, skewed towards taxing short-term capital gains more severely. Also, the assessments on land for inheritance tax purposes are far less than on other types of inherited assets. The resultant lock-in effects would enhance reserved demand for land (especially for the long term), and reduce supply. Simultaneously, the high tax rate on capital gains, combined with the heavier taxation on short-term trading, has had the effect of depressing new demand (especially short term).

Here, we shall consider economic fluctuations, both short and long term. Transaction costs on land are higher than those on other kinds of assets, thus, by nature, it is not suitable for short-term trading. This nature is intensified by the heavier taxation on short-term capital gains. Hence, even if the economic utility or profitability of land improves, if it is expected to be temporary, or the anticipated profit less than the transactions cost (including the higher tax rate on short-term capital gains) the actual demand for land would not increase. The lock-in effect will curb the shift in demand curve (compared with the situation where it does not exist) by suppressing demand changes in response to short-term or small economic fluctuations. In other words it would have the effect of stabilizing the land prices.

On the other hand, what would happen if changes were long term and structural? For instance, if higher rents were expected, demand would shift substantially. As we saw in footnote (8), reserved demand is less elastic than new demand. Consequently, the more severe the lock-in effect is and the greater the ratio of reserved demand to total demand, the steeper the slope of total demand for land will be. In Figure 8, total demand curve for when the lock-in effect is large and small is represented by DD and dd, respectively. Assuming that both DD and dd shifted by the same margin, it is evident that the change in the price of land in the case of DD, where the lock-in effect is larger, would be greater. In other words, in the case of short-term economic fluctuations, the lock-in effect will serve to stabilize land prices but in the case of long-term changes it will have the reverse effect by amplifying price fluctuation through a steeper demand curve. According to equation (19), the lock-in effect strengthens as capital gains $((1+g)^m - 1)$ in (19) accumulate, and also as new demand which flowed into land market so far was larger under the heavy tax on short-term capital gains. Hence, if the land price rises in this period due to increased demand ($DD \rightarrow D'D'$), then the lock-in effect in the following period would be reinforced (the slope of the demand curve would be steeper). Assuming that the rise in land prices is expected to continue into the next period, then the rise in the next period would be more pronounced. Consequently, under expectations of continuous increase in land prices, the demand curve would shift repeatedly upward, making its

Figure 8. Relation between Variations in Land Price and Lock-in Effect

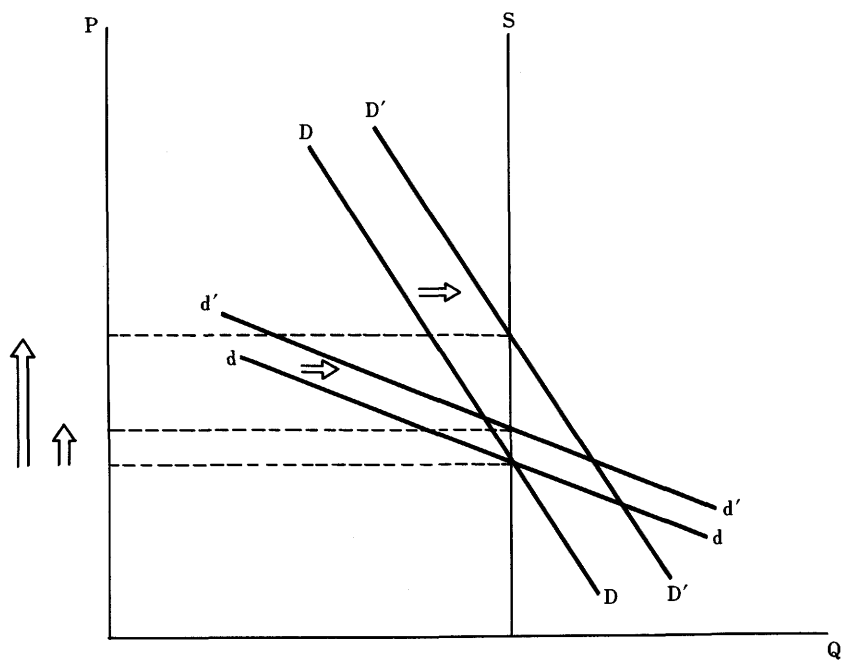
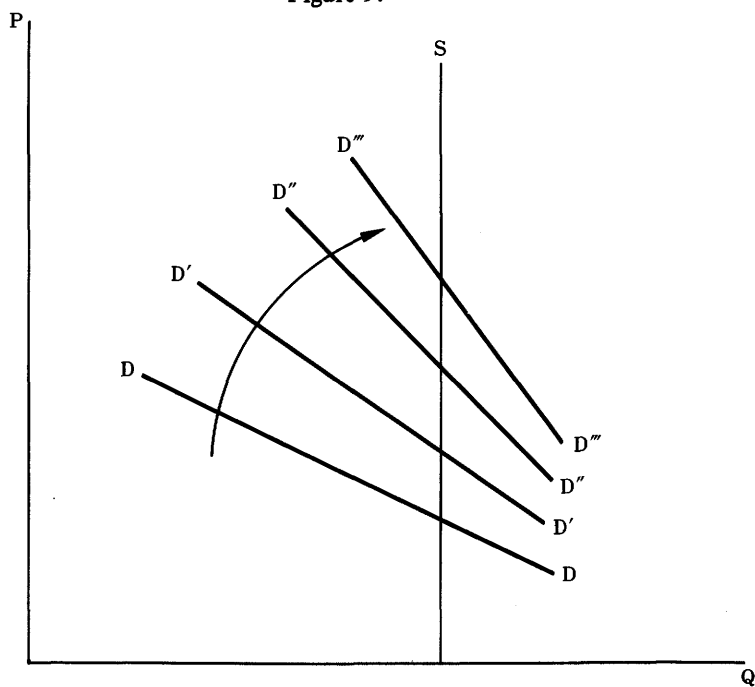


Figure 9.



slope steeper (Figure 9).²² Land prices would surge at an accelerated pace. On the other hand, what would happen to land prices under diminishing demand? Let us consider the case in which new demand would decrease after an accelerated upsurge in prices. Under heavier taxation on short-term capital gains, demand that had entered the land market up to the previous period would not readily exit. Such demand would possibly continue to remain in the market with the view to becoming long-term holdings, which would enable the heavy tax imposed on short-term capital gains to be avoided (the nominal tax rate would be dramatically reduced by doing so). In this case, the downward shift of the demand curve would remain limited; and land prices would continue on a high plateau. Japan's land prices are often described as "easy to rise and hard to drop." This asymmetry resulting from the lock-in effect is important in analyzing the issues related to Japanese land prices.

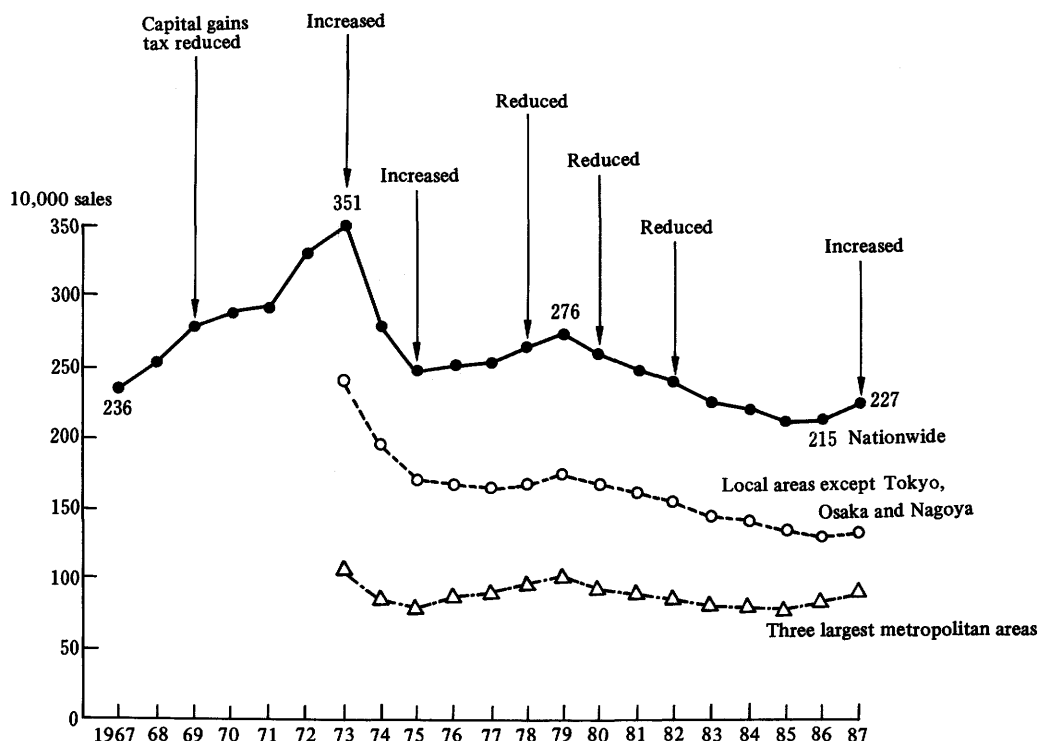
Next, we shall study the existing land taxation system from a longer viewpoint. As already described in Section II,B., the system has revised several times in order to cope with escalating land prices caused by (1) the lack of effective supply, and (2) speculation. It should be noted that the government attempted to cope with the issue mainly through revising the capital gains tax. On the other hand, the effective rates of property and inheritance tax on land had virtually remained low due to their low assessments and other measures for reducing the tax burden. This caused the following problems. When the capital gains tax was eased for the purpose of promoting land supply, it also served to expand expected profits on land speculation. Hence, in order to ensure the long-term stability of land prices, the government's policy had to aim at lessening potential possibility of land speculation as well as promoting supply. In other words, it had to take any measure to offset the increase in expected profits from speculations that stemmed from the relaxation of capital gains taxation. More specifically, the property tax (the cost of land holdings) should have been adjusted to promote the intensive utilization of land.²³

However, in fact, the effect of promoting effective land supply due to the relaxation of capital gains tax was eventually overcome by speculation, because the property tax remained at a low rate. In other words, the instability of Japan's land taxation system is possibly due to the fact that the government's tax policies were inadequate to both expand land supply and prevent speculation, because most depended on varying the capital gains tax rate (shifting emphasis between reducing the lock-in effect and suppress-

²²Because most of the increase in demand is new, the demand curve DD shifts are becoming less steep. However, even in this case, the slope will become relatively steeper, compared to when the land price did not surge in the previous period.

²³Japan's property tax appears ineffective in forestalling land speculation because the assessed value of land is considerably below market value, the tax burden does not adequately serve as an incentive for promoting efficient usage. If the effective tax rate were raised, demand for under-utilized or unused land would be reduced, and the intensive use would progress. (As a result, the possibility of land speculation would be reduced.)

Figure 10. Trend of Land Sales



Source: Ministry of Justice, *Annual Report on Civil Affairs, Litigations and Human Rights*.

sing speculation). As a result, the instability of land prices was also thought to be amplified by such a inconsistency in land taxation. Moreover, a policy that relies solely on easing the capital gains tax in order to encourage land supply is questionable from the point of efficacy. While the impact of property tax extends to all landowners, capital gains tax only applies to marginal landowners, who are faced with the decision either to retain holdings or to sell them; hence the efficacy of the capital gains tax could be relatively weak. Consequently, in order to ensure the encouragement of supply by easing the capital gains tax, it is imperative that the property tax rate should be raised so as to increase the number of marginal landowners. As a matter of fact, Figure 10 shows that the number of land sales since 1979 has gradually declined (while the capital gains tax was being relaxed); this indicates that the effectiveness of the land policy has been slight.

B. Factors behind the recent upsurge in land prices

Based on the foregoing analysis, we shall now study the background causes of the recent upsurge in land prices. As we have already seen in Section III., A., land prices

move in response to changes in (1) rent, (2) anticipated growth of rents or land prices, and (3) rate of return (interest rates) on alternative assets. Taking this into account, it could be argued that the factors which account for the recent upsurge in land prices are: (1) the concentration of businesses and data telecommunications functions in metropolitan Tokyo, which subsequently occasioned an acute shortage of office space; (2) anticipation that the further concentration of business functions in metropolitan Tokyo would inevitably escalate land prices in the region; and (3) the relative easy money policy. These three factors seem to have led to skyrocketing land prices.

At this point, it is worth noting that the concentration of many business functions in metropolitan Tokyo had undoubtedly stemmed from an increase of productivity and rents of real estate in the area. Accordingly, at least from the viewpoint of efficient resource allocation, the upsurge in land prices could be justified as the natural consequence of structural changes in Japan's economy. Moreover, according to Miyao (1987b), "even speculative transactions in land in metropolitan Tokyo are not necessarily problematic, as long as they relevantly reflect the future trend of rents and land prices".²⁴ In other words, the upsurge in land prices was, to some extent, inevitable and desirable changes in relative prices between Tokyo and local areas.

This being said, the important point of the issue is to what extent the upsurge in land prices really reflects changes in economic fundamentals. Regarding this issue, we first examine the effect of easy money policy in recent years, which can not easily ignore the recent upsurge in land prices. As can be seen in the appendix the reduction in interest rates (i.e. reduction in opportunity cost) and quantitative expansion of credit (i.e. easier access to borrowings) stimulated demand for land, clearly preparing ways for land speculation.^{25,26} It is difficult to deny that these factors account for skyrocketing land

²⁴In general, speculative investment facilitates dynamic reallocation of resources; it also has a price-stabilizing effects when it is profitable. If the increasing inequity in the distribution of income between landowners and the landless is to be redressed, the best policy is to use some income-redistributive measures.

Nonetheless, the concept of "speculative transaction" as defined by Miyao must be narrowly interpreted because of the following reasons:

(1) Because the cost of converting land into some alternative usage is huge, the excessive volatility of land prices due to speculative investment may increase costs of readjustment unnecessarily.

(2) Speculators aiming only at capital gains tend to hinder productive utilization.

²⁵Refer to Appendix. Many analysts have pointed out that with the upsurge in land prices, the mortgage value of land escalated which, in turn, served to increase the volume of mortgage loans made on land. Iwata (1988) points to the fact that stock prices soared parallel with land prices, and indicates that there is a possibility that the portfolio-balancing effect in investing in land and stocks accelerated the surge in the value of both.

²⁶Noguchi (1987) hypothesized the case where an investor purchased land to build a rental building and calculated the theoretical price of land (positing the current value of the rental income as being equal to current expense). He stated that the market value of land in central Tokyo was two-fold higher than posted prices of the National Land Agency in 1987 and three-fold or more higher in regional cities. He concluded that "this gap could not be justified by the earnings derived from the utilization of the respective land and, in this sense, there appears to be a speculative bubble." He also suggested a need for tightening monetary policy in order to cope with the issue.

prices in metropolitan Tokyo. Nonetheless, as the polarization of land values between metropolitan Tokyo and other areas shows, the recent upsurge in land prices in Tokyo is basically due to the "short supply of land and the result of vigorous demand for land in areas where expected profits are high" (Miyao 1987a). Hence, it is evident that the tightening of monetary policy alone will not be enough to solve the whole issue of escalating land prices in Tokyo. Needless to say, tight monetary policy could serve to suppress the demand for land and prick speculative bubbles. Nonetheless, it is too optimistic to hope that it would immediately bring down land values in Tokyo to appropriate levels. This is because, as we have already seen, in Japan there exists a strong lock-in effect, which functions to intensify the escalation of land prices as demand for land accelerates, while hindering the decline of land prices when demand for land decreases. Even if monetary policy were tightened, there is a possibility that it would achieve only a very limited reduction in the level of land prices (hence, the asymmetric effect of monetary policy on land prices). Moreover, if we are to discuss whether monetary policy should be tightened to forestall the escalation of land prices, the following questions need to be carefully considered as well; (1) How do we evaluate that land prices are only surging up, while price levels in general, such as wholesale prices, remain rather stable (In contrast, when land prices soared in 1973 and 1979, inflation followed in tandem and monetary policy was tightened)? (2) What accounts for the stability of land values in local areas? (3) How can Japan strike a relevant balance between its international commitment to expand domestic demand and tighten monetary policy?

Next, we shall consider the effect of land taxation. In our analysis so far, it has been shown that Japan's land taxation system is problematic because: (1) it enables a landowner to hold on to his land which, in turn, prevents its efficient and intensive utilization; (2) its lock-in effect is closely related to the peculiar movement of Japan's land prices, which are characterized by "easy to rise but hard to drop." When the cause behind the recent upsurge in land prices is analyzed in this context, it could be pointed out that while demand for land continues to be more and more concentrated in Tokyo, the present distorted tax system and subsequent delay in demand-supply adjustment added to the expectation that excess demand would last for a long time. Consequently this raised expected returns (capital gains inclusive) from holding land. The distortion in the current tax system triggered off the initial land price rise by exacerbating the concentration of land demand in Tokyo through an additional rise in expected returns. This rise was further accelerated both by the lock-in effect (see Figure 9) and the increased availability of low-cost financing for land purchases due to an easier money policy.

How should the outcome of the current situation be interpreted? At this point, it would be well to distinguish between the high growth rate and high level of land prices. As we have already seen, there is a strong possibility that the recent upsurge in land prices was mainly caused by an easy money policy and distortions in the land taxation system. Nonetheless, medium and long term, the pathological nature of Japan's land

prices lies basically in their excessively high level and asymmetric flexibility. Accordingly, if we are to find any real solution, the following points have to be taken into consideration: (1) in the market itself there exists the factor that inhibits the smooth adjustment of supply and demand thereby accelerating the upsurge in land values, while resisting declines; (2) consequently, structural reform is necessary which includes changes in the current land tax system. Specifically, it is important to revitalize the demand-supply adjustment mechanism which has been paralyzed by land taxation and various regulations.²⁷ If the mechanism functions smoothly again through the elimination of these distortions, and if sales and effective utilization of land are promoted, then the potential danger of a land price explosion will subside, as fluctuations in expected return on land holdings become smaller (and as delays in demand-supply adjustment no longer push up the level of expected returns). Also, monetary policy will recover its symmetric influence on land price.

It should be noted, however, that the aim of these policies is to get rid of the distortions affecting land price determination, not to reduce or freeze the level of land prices. Any reinforcement of regulations which seek to freeze land values will only suppress the supply of land and its highly intensive utilization. Such regulations will possibly end up in exacerbating resource misallocation.

C. The desirable system

As we have discussed, Japan's land taxation system, which should "promote the effective supply of land," seems to have adversely served to make land holdings more preferable and obstructed the effective supply and efficient utilization of land. What government policies should aim at is the removal of factors that distort the market mechanism of land pricing, and of the inconsistency between related taxes in order "to promote the efficient utilization of land." More specifically, (1) the assessment of property tax and inheritance tax on land should be raised to appropriate levels and (2) the lock-in effect hindering the supply of land must be removed. Based on the foregoing analysis, we shall now outline a desirable taxation system for land.

1. *Adjustment of land value assessments for taxation purposes to appropriate levels*

The property tax, representing the holding cost, is the major factor that affects the

²⁷As an emergency measure for coping with the problem, the government designated areas where land transactions were mandatorily monitored to forestall speculation. It also requested financial institutions to exercise self-restraint in financing land purchases. Subsequently, land prices peaked out and in some areas of metropolitan Tokyo are said to have slumped 20-30%. In the anchorless land market where prices move violently in one direction or the other away from fundamentals (Section II.C.), such financial measures seemed to have played an important role in "restoring normality" (Mayekawa 1988) and bursting the speculative bubble. However, because there is the danger that monetary regulations would in the long-term distort the optimum allocation of resources, regulations must be elastically applied. As discussed in the Appendix, this is clearly evident from the fact that financial regulations could produce a corner solution.

landowner in deciding to retain or sell land, or to convert its usage. However, the rate of assessment has so far been so low that the property tax has not functioned properly as a holding cost. Also, it could be said that this inadequacy forced the capital gains tax to be excessively unstable (the capital gains tax has undergone revision from time to time in order to cope with the lack of effective land supply and to suppress land speculation).

There is another major role that the property tax should have played. It is the role of absorbing benefits resulting from land development (pecuniary external effect) such as public investment. For instance, public investments in roads or railways in the vicinity of land owned would raise its utility (economic convenience, etc). As a result, the landowner would benefit from a price rise in his land.^{28,29} In this case, the property tax is something like a taxation on such a free-rider. In fact, in the U.S. and Europe, property tax is an important source of local government revenues.³⁰ So far many local governments have been embarrassed by a shortage of revenue for public investment, because a large portion of the budget is needed just to acquire land. However, if the government could absorb the externality (benefit from public works) through property tax, it could establish an influential process prompting the effective use of land. This can be accomplished by the following mechanism: Public investment would make land prices higher. This would lead to an increase in tax revenue which should be appropriate as the source of the next reinvestment, if property tax could properly work to absorb the externality. While public works have the effect of raising land prices in areas where implemented,

²⁸Let us consider demand for rental housing, the demand price for which is supposed to be the sum of the rent plus the cost of transportation (such as commutation), and which should be initially in equilibrium with respect to alternative areas (each consumer surplus, CS, is equal). Hence if a railway line is established in a certain district, the cost of transport is reduced and this would increase each resident's CS. Under perfect mobility, each would move there since he could increase his CS. As a result, this would cause rents to rise to the level where CS becomes equal to that in other areas. The rise in rent inevitably increase land prices; in the end it is the landowner rather than the tenant who benefits from public investments (because the increase in CS is offset by the rise in rent). In this stage, however, since the market mechanism works properly (any market failure has not occurred), the rationale for imposing property tax is justified by equitability being maintained.

²⁹The benefit from the intense accumulation of business functions in metropolitan Tokyo, some sort of economies of scope, is thought to be one of the pecuniary externalities in a sense that it could reduce the cost of transactions and collections of information. On the other hand, let us consider congestion as a disadvantage of this concentration. In this instance, each individual determines his demand based on the private cost he faces, where he does not adequately recognize the additional influence of his decision on others (such as worsening congestion, etc.). Because of this divergence between social cost and private cost (technological externality), the market fails in optimal resource allocation. The current abnormal trend of concentration in Tokyo could be thought accelerated "due to its benefit being fully recognized and disadvantages not yet adequately internalized" (Namekawa 1988).

³⁰Local authorities in the U.S. derive 72% of their revenues from property tax (Table 7). In contrast, Japan's property tax accounts for only 34% of such revenues (both based on 1979 data). This proportion has been on a downward trend from 47% in 1955, while inhabitants tax increased in importance. (Hashimoto and Yamamoto 1987). The West German government, where taxation on land holdings is low (13%), has also introduced a system to absorb the benefit stemming from developments since 1971. (National Land Agency 1988).

Table 7. Ratio of Local Government Revenues Derived from Tax on Real Estate

| (1979) | | |
|--------------|--------------|-----------|
| | Tax | Ratio (%) |
| Japan | Property tax | 34 |
| U.S.A. | Property Tax | 72 |
| U.K. | Rate | 100 |
| West Germany | Grundsteuer | 13 |

Source: Hashimoto and Yamamoto (1987).

Table 8. Breakdown of Source of Local Authorities Revenue

| (% composition) | | | | | | | |
|-----------------|------|------|------|------|------|------|------|
| | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1986 |
| Property tax | 47 | 43 | 39 | 35 | 36 | 33 | 33 |
| Inhabitants tax | 32 | 33 | 40 | 43 | 46 | 49 | 50 |
| Others | 21 | 24 | 21 | 22 | 18 | 18 | 17 |

Source: Local Government Finance Association, *Annual Report on Local Government Financial Statistics*.

they increase the whole amount of land with a certain quality (e.g. where a new railway line will open a vast area for residential development). This could possibly have the effect of reducing average land prices for residential purposes (Hatta 1987).

Raising the effective rate of property tax is, to be sure, a very controversial issue. For the average household, real estate is a housing asset not a resource for producing revenue. From this viewpoint, some claim that a rise in its value does not improve tax-bearing capacity or cash flow, and hence an increased tax burden could have a harmful effect on the residential environment. However, in Simons' sense,³¹ a price increase in housing could be equivalent to the generation of new income in the form of a rise in asset value or imputed rent; and, hence, the above argument would not be plausible. But for the constraint on borrowings, it should not have any impact on land holdings since it does not cause liquidity problems. A higher property tax may make the holding of land disadvantageous through the higher holding cost. However, we must note that the very purpose of land or housing policy should be to improve the living environment, not to promote or protect land holdings. In other words, "What the government should aim at is the provision of housing services above the national minimum (minimum living standards) not the creation of minimum land holdings" (Iwata 1988b).

³¹According to Simons' definition of income (tax base), taxable income is equal to sum of consumption and net increase in asset value (comprehensive tax base).

The foregoing argument for raising the effective tax rate also holds for the inheritance tax. The low rate of assessment on land makes inheritance in the form of real estate advantageous. This could enhance demand for land and hinder its sale for the purpose of tax savings, as a result of which land prices have possibly been pushed up (Kanemoto 1988b). The inheritance tax should be revised so that all inherited assets are equally taxed at the same rate by raising the effective rate on land.³²

2. *The removal of the lock-in effect*

Another important point to ensure the effective supply of land is the removal of lock-in effects. They are caused by the decline of effective tax rates as the holding periods become longer (or with the growth of benefits from deferred tax payments). Hence, for the purpose of eliminating the lock-in effect, it is imperative that the effective rate of tax be imposed at the same rate for all landowners in each period.

First, if an unrealized capital gains tax were introduced (equation 20, Section III), the lock-in effect could be removed. However, to adopt an unrealized capital gains tax there exist some difficulties such as the feasibility of proper assessments, the tax-bearing capacity and liquidity of taxpayers. In fact, this kind of tax is presently implemented only in Italy³³ (National Land Agency 1988).

Second, even if the taxation on unrealized capital gains is impossible, it could be feasible to maintain the effective tax rate for every period constant on the average, by devising a means of taxing at the time land is actually sold. An intuitive method would be to make capital gains tax progressive according to the holding periods. More precisely, this could be accomplished by (1) changing the nominal tax rate in accordance with the prevailing interest rates to cancel out any benefits from deferring payments; or (2) imposing the usual tax on the average rate of capital gains retroactively calculated when gains are realized. These would serve to eliminate the lock-in effect without causing liquidity problems. In other words, in (1) the authorities assess unrealized capital gains for each period and impose additional tax equal to the assessed gains multiplied by the rate of return on alternative assets (e.g. interest rates) as deferred interest, in addition to the regular tax on capital gains ("the capital gains tax with deferred interest," Iwata 1977).^{34,35} Also in case (2), when the capital gains are realized, the authorities calculate

³²The increased burden following the rise in rate of assessment should be offset by less-distorting means to the resource allocation (such as some reduction in the tax rate or raising the deduction).

³³In Italy, in addition to normal realized capital gains tax, an unrealized capital gains tax on land held by real estate companies etc., is imposed every ten years.

³⁴Iwata (1977) proposes a 100% tax on capital gains with deferred interest—this tax would suppress land speculation as well as remove the lock-in effect. If we intend only the latter, there is no necessity for taxing capital gains at 100%. A similar argument is evident in the proposal of Komiya and Murakami (1972), where they propose a capital gains tax of 100%. A 100% tax would completely eliminate speculation; however, on the other hand, it would deprive landowners of the incentive to sell at higher prices (to those who could use them in a more intensive way), and it could lead to the misallocation of resources.

³⁵At the same time, as a means for eradicating the lock-in effects and suppressing speculation, Iwata (1988a)

the average rate of capital gains during the holding periods and impose the capital gains tax on the calculated rate retroactively over the periods, regarding it as a rate of gains for each period ("the capital gains tax neutral to the timing of selling," Hatta 1988).³⁶

We must take note of the fact that the foregoing arguments are based on the premise of a flat tax as employed in the United States and Europe. In Japan, capital gains from shorter term holdings are taxed heavier (very short-term capital gains at 50%, short-term at 40%, and long-term at 20%; in the case of separate taxation on individuals). In Japan even if a reduction in the effective tax rate by deferred tax payments could be avoided, the discriminatory difference on the nominal tax rates between short- and long-term taxes would still cause the severe lock-in effects.

Japan's capital gains tax tackles land speculation through a higher tax on short-term gains. However, it seems evident that the prohibitively heavy tax on short-term holdings has caused lock-in effects and accelerated the upsurge in land prices. In Section IV.A., we stated that the lock-in effects had the effect of stabilizing land prices against short-run fluctuation. As Nishimura (1987) points out, however, it was only implemented by suppressing land demand by means of heavy taxation and was no more than the accumulation of distortions (suppression of sales and less-efficient utilization) in the market. Furthermore, it is impossible to deny that the extremely heavy tax on short-term capital gains combined with the inadequacy of the property tax locked in the supply of land and accelerated the price rise by increasing the scarcity of land.

As we have already seen, a capital gains tax without lock-in effects has a progressive tax rate according to length of holding period. If this kind of tax were adopted, capital gains tax burden in cases such as residential real estate held continually for several generations, would be extremely high. Hence, adoption of this type of tax is faced with a lot of difficulties. However, the discriminatory difference of the nominal tax rate for short- and long-term holdings should at least be modified (toward the adoption of the

proposes the following "New tax on capital gains":

$$T = \theta_p P_1 + \theta_c (P_t - P_1)$$

where T is the tax burden; P_1 and P_t are respectively the acquisition price and the current land price, θ_p and θ_c are respectively the rate of tax on the property and the unrealized capital gains; the rate of unrealized capital gains tax is calculated by multiplying the usual tax rate on capital gains by the interest rate. According to this formula, the second term on the right hand side will serve to remove the lock-in effects; and it can also avoid liquidity problems by permitting deferred tax payments. And if an enormous shift of speculative funds were seen from financial assets to land, the interest rate would rise, which would automatically serve to suppress such speculation.

³⁶Assuming the rate of capital gains for each period to be g , under the current tax system, net capital gains after taxation for holding periods of S would be $(1+g)^S(1-\theta)$, where θ is the tax rate on capital gains. On the other hand, it would be $(1+g(1-\theta))^S$ ex post facto under the above method of taxing. As a result, the benefit from deferring tax payments would almost disappear. Hatta proposes that the tax rate be set at 20% (equivalent to the tax on interest) in order to prevent inequity in taxing other kinds of assets.

“flat tax”).³⁷ More to say, when the higher the rate is, the greater would be the lock-in effects, as demonstrated by equation (19); and the greater incentives it would give to inherit in the form of land (otherwise both capital gains tax and inheritance tax are imposed). Taking these into consideration, the flat tax itself should be set at a low level.

V. Conclusion

In this paper, using a simple demand model, we have clarified the mechanism of land price determination and critically examined Japan's land taxation system. Our conclusion is: “The low assessments for property tax and inheritance tax make land holdings preferred. On the other hand, the capital gains tax, which taxes short-term gains heavier, causes great distortions in the land pricing process through its lock-in effects.” In other words, “the land taxation system, which should promote the effective utilization of land, is producing a contrary effect.” Furthermore, we have pointed out the possibility that the inconsistency between property tax, capital gains tax etc., has been weakening the efficiency of land policy, which aims at stabilizing land prices and promoting effective land utilization, and that there exists the possibility that this could destabilize the land taxation system.

In the past several years, Japan's stock has accumulated at a rapid pace, and the impact of fluctuation in both share prices and land prices on the real economy has gradually intensified. Under such a scenario, it is quite natural that the need for macroeconomic policies to stabilize stock prices is becoming more and more important. Under currently prevailing circumstances, if the land taxation system maintains its flaws, it is not difficult to imagine that the ensuring distortions will be further aggravated.

In July 1988, the government announced general outlines on land policy based on recommendations of the Administrative Reform Council's report. It clearly mentions that “the owner of land is responsible for its proper utilization,” and that “the landowner must equitably bear the social responsibility or burden in accordance with the benefits he derive from it.” The implementation of these responsibilities is the very role of property tax. Since the impact of property tax is on all landholders, raising of its effective rate would undoubtedly encounter great difficulties. However, it should be effected so as to obtain a desirable land taxation system.

Finally, we shall refer to problems such as laws and regulations, which we have omitted in this paper. As seen in Section IV.C., the utilization of any land affects adjacent land values and uses through its externality. In Japan, utilization is restricted by “zoning regulations,” “a regulation on the ratio of the volume of a building permitted on a lot” and “guidelines on the development of land for residential purposes.” These aim at

³⁷It is important to note that in reducing the tax rate, the assessment for property tax must also be adjusted (raised) to an appropriate level.

"creating a desirable living environment by forestalling (technological) external diseconomies such as disorderly development and congestion" (National Land Agency 1988).

In the current stage, however, these regulations, such as zoning regulations, are applied "in an inflexible and competition-restrictive manner" and they somewhat prevent the optimum usage and development of land" (Miyao 1987a). Moreover, administrative guidelines on the development of residential land impose a large burden on the developer, such as requirements of providing public infrastructure. As a result, the guidelines excessively suppress land development and are possibly a factor pushing up land prices. This defect also exists in the law on the leasing land and renting housing; the purpose of the law is to protect the lessees' rights or the rights to enjoy steady land services. However, the current law is so highly biased in favor of the lessee or renter that it tends to prevent the supply of such services (social and leagal cost), and in the end, effective utilization of land (Iwata 1977; Miyao 1987a, 1987b; and others).³⁸

Against the escalation of land prices from 1986 to mid-1987, the government introduced emergency regulations requiring land transactions to be monitored by local authorities and requested financial institutions to exercise self-restraint in financing land purchases. Subsequently land values peaked out and have been on a downtrend; the emergency measures are thus considered to have attained one of their purposes at least. Such regulations, however, should be employed only for the purpose of eliminating external diseconomies associated with land use. The suppression of land prices is beyond the scope of regulations.³⁹ The universal and competition-restrictive regulations will possibly tend to distort the optimum allocation of resources in the long run. Emergency measures must be used only as a means for temporary fine tuning and be flexibly and minimally applied.

Another factor that we did not discuss in this paper is the role of information. Stock prices are highly dependent on future expectations. On the other hand, since there is no integrated market for real estate, land prices are determined by a handful of market participants with incomplete information. Under these circumstances where the anchor

³⁸In a similar vein, there is an argument that real estate be securitized placed under trust. In the United States, master limited partnerships (MLP) and the real estate investment trusts (REIT) have been popular (1) as a means for a developer to finance a project, and (2) as a financial working instrument for investors (Kaneko, Hashigami, et al., 1988). The argument in Japan for securitizing real estate mainly arises from the latter view that land holdings as an asset hinder efficient land use. This aims at converting ownership of real estate into a financial instrument to promote efficient land use by creating alternative assets (for instance, indexed bonds (Noguchi, 1980) prices of which are indexed to those of land).

³⁹For instance, the Land Development Planning Law designates two categories: "urbanization promotion areas" and "urbanization control areas," and regulates development in the latter to forestall urban sprawl. Land prices are determined equal to the discounted present value of future rents, which depend on the possibility of future developments. Namely such regulations will have a negative effect on land prices. Nonetheless, if developments in urbanization control areas are restricted while demand for land is on the uptrend, then prices in unrestricted areas (urbanization promotion areas) will inevitably go up.

of fundamentals would be difficult to work, there exists considerable possibility that land prices would fluctuate highly in one direction or the other (such as the band-wagon effect). It is also important to create an integrated information network and to adjust various assessment prices to relevant and uniform levels from the viewpoint of reducing information imperfections (Noguchi 1987, 1988b). In the latest stages of skyrocketing land prices, the government ordered financial institutions to exercise self-restraint in financing land purchases to suppress speculation. Such financial measures as a means of "fine tuning" will become increasingly important to suppress violent moves and to prick bubble factors. Namely, in order to stabilize stock prices, it is imperative that the uncertainty implicit in the process of price determination as well as distortions in the real economy should be timely remedied by financial measures.

Appendix: The Impact of Monetary Ease—A Theoretical Analysis

We shall study the relationship between demand for land and the relaxation of monetary control using a model for maximizing expected utility (for details, see Iwata 1977). Assuming that land is a risky asset, we shall consider the investor's portfolio selection between it and a safe asset (bank deposit). First we define the value of wealth (W) at the beginning of the period (indicated by subscript $_0$) and the asset value at the end of the period as follows:

$$W_0 = PT_0 + D_0 = PT + D, \quad (A-1)$$

$$W = (1+e)PT + (1+\rho)D, \quad (A-2)$$

where e is the expected rate of return from land and ρ , that from a safe asset. T and D are the amount of land and deposit that the investor holds respectively. When his utility function, $EU(W)$, satisfies the following characters $EU' > 0$, $EU'' < 0$ (risk-averting), then the Lagrangean function (L) will be:

$$L = E[U((1+e)PT + (1+\rho)D)] + \lambda(PT_0 + D_0 - PT - D). \quad (A-3)$$

First order conditions for maximizing this function are given by the following three equations:

$$L_T = EU'(1+e)P - \lambda P = 0, \quad (A-4)$$

$$L_D = EU'(1+\rho) - \lambda = 0, \quad (A-5)$$

$$L_\lambda = PT_0 + D_0 - PT - D = 0. \quad (A-6)$$

Then, from (4) and (5), we obtain the following solution,

$$EU'e = EU'\rho. \quad (A-7)$$

In other words, when the expected marginal utility of the rate of return from land and that of interest rate are equal, the investor's expected utility is maximized. Here, let us consider the two states in the future represented by x_1 and x_2 (their probability is π_1 and π_2 , respectively). Then we can rewrite the equation (2) showing the asset value at the end of the period as follows:

$$\begin{aligned} W(x_i) &= (1+e(x_i))\alpha W_0 + (1+\rho)(1-\alpha)W_0 \\ i &= 1, 2 \\ \text{where, } e(x_1) &> \rho > e(x_2). \end{aligned} \quad (\text{A-8})$$

α is the portion of land in the investor's total wealth. By eliminating α from both equations, we get the investment opportunity line (AB of Figure A-1):

$$W(x_2) = \frac{e(x_2) - \rho}{e(x_1) - \rho} W(x_1) + \frac{(1+\rho)(e(x_2) - e(x_1))}{e(x_1) - \rho} W_0. \quad (\text{A-9})$$

$W(x_1)$ is measured on the horizontal axis and $W(x_2)$ on the vertical axis in Figure A-1. Point A on the 45° line indicates that all wealth is invested in safe assets ($\alpha=0$). Likewise, point B shows the case where all wealth is invested in land ($\alpha=1$). On the other hand, the investor's utility function is given by:

$$EU(W(x)) = \pi_1 U(W(x_1)) + \pi_2 U(W(x_2)). \quad (\text{A-10})$$

Equilibrium is obtained at point E, or the tangented point of equations (A-9) and (A-10).^{40,41}

Here, we shall examine the impact of the relaxation of monetary policy. With a decline in interest rates, the investment opportunity curve AB will shift to A'B (the slope becomes smaller). Demand for land increases and the equilibrium point shifts from E to E' (α increases). Now, we must note that at point E' α is more than 1. In other words, the investor invests all his wealth in land (where $\alpha=1$) and furthermore borrows to buy more

⁴⁰The slope of the indifference curve indicated by equation (A-10) is

$$-\frac{dW(x_2)}{dW(x_1)} = \frac{\pi_1 U'(W(x_1))}{\pi_2 U'(W(x_2))}.$$

On the other hand, the slope of AB, the investment opportunity line is

$$-\frac{dW(x_2)}{dW(x_1)} = -\frac{e(x_2) - \rho}{e(x_1) - \rho}.$$

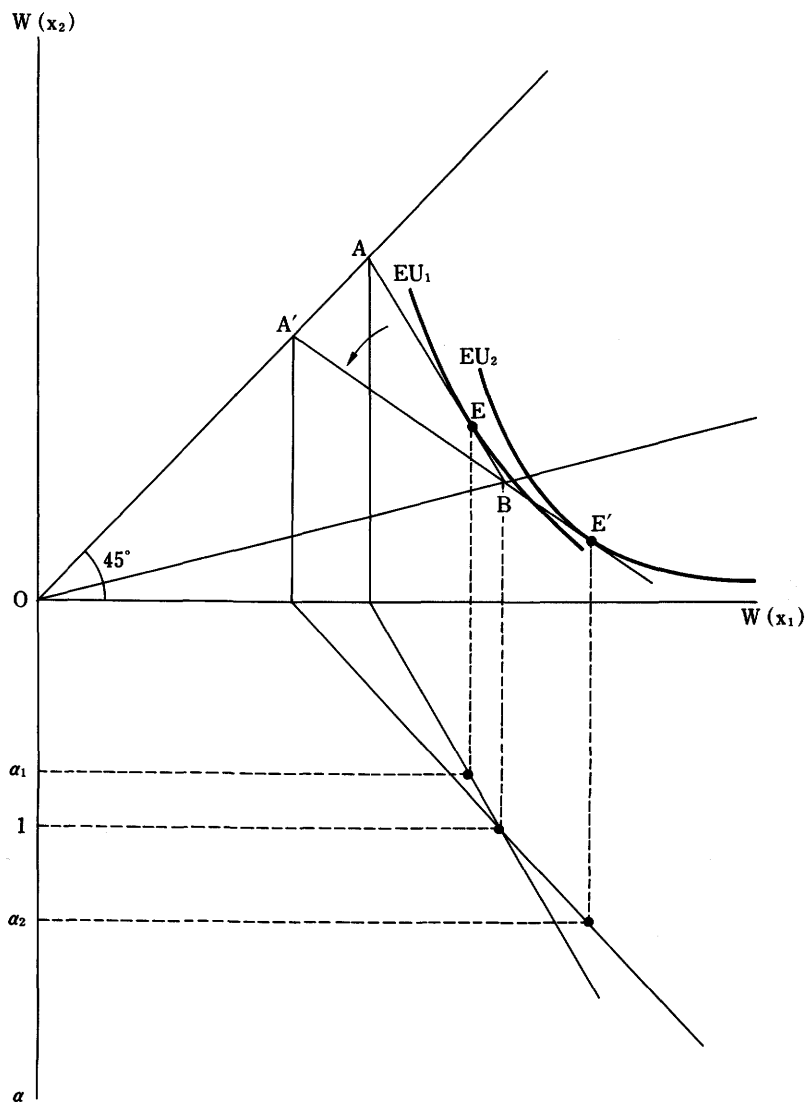
Consequently, at the point of tangency, it becomes:

$$\pi_1 U'(W(x_1))e(x_1) + \pi_2 U'(W(x_2))e(x_2) = [\pi_1 U'(W(x_1)) + \pi_2 U'(W(x_2))]\rho.$$

This is equivalent to the maximizing condition, or equation (A-7).

⁴¹In Figure A-1, taking the favorability of land holdings in Japan into consideration, the investor's utility curve is drawn tangentially to line AB nearer point B (where α is large).

Figure A-1.



Source: Iwata (1977).

land. If the investor is faced with borrowing constraints his investment in land will not reach point E' ; if borrowings are entirely impossible, point B inevitably becomes the optimum (the corner solution). When the availability of funds improves under monetary ease, however, the investor can borrow funds needed to attain point E' , where $\alpha > 1$. This demonstrates that land demand is dependent on the availability of funds as well as interest rates. In the case of the recent upsurge in land prices from 1985, it is said that

while the manufacturing industry's demand for funds stagnated, redundant funds flowed into the real estate market (or the stock market). This situation seems to be close to the argument above. Moreover an investor's portfolio comprises both land and debts, which are exempt from inheritance tax (at the same time, the low assessments on land have the effect of reducing taxable income). Thus, there is also a good possibility that investors would choose situations where $\alpha > 1$ due to these tax saving effects (the exemption of interest paid on debt from rental income taxation as well).

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