

How Efficient Is Urban Land Speculation?

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Abstract
This piece of writing aims to scrutinize the results of speculation in land at the urban sideline on resource allotment. By identifying supplementary than a few distinct possessor types, the paper discloses that changes in possession as fighting fit as to the temperament and use of the land were the key indicators of urban land speculation. The authors conduct a case study and a model plan. A straightforward self-motivated model of the residential spot is urbanized, and its properties are analyzed both qualitatively and numerically. One finding is that social costs in a typical city are increased by about five to eleven percent as a result of speculative increases in the value of idle and underutilized land.
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1. Introduction

The occurrence of land speculation is seen far-reaching (Hoyt, 1933). The border area of Latin America has been categorized by land speculation and exploitation (Smith et al., 1997). In the same way, in the Chinese Pearl River Delta, economic growth induces a boom in property values which provoked the speculation of land (Yeh and Li, 1999). According to Baird (2014), there is a need to identify the phenomenon allied with land speculation and the penalty of land speculation. In the United States, the unused housing (speculated housing) of the existing housing was the main cause of urban slums and it was the motivation behind suburbanization (Clawson, 1962). During China's land reforms, soaring land prices triggered the land speculation and became a source of revenue (Du and Peiser, 2014).In Hong Kong, China, land speculation led to a lively property market. The increasing trend in property sales indicated that Hong Kong's economy was intertwined with various sectors, like banking, construction, stock exchange (real estate) and transportation. Such a prosperous effect on the economy lasted for a long period of time (Chui, 2001). In Bangkok, evidence demonstrated that surplus purchase of housing by land speculators resulted in over-investment by developers matching to unsustainable and unrealistic demand levels, there by disrupting markets equilibrium. Out of 350,000 housing units built, only one-third of the units were purchased by the inhabitants (PornchokchaiandPerera, 2005).

The usual economic definition of speculative market activities concerns the motives of buying and selling. A speculator is one who deals in a good in order to exploit anticipated changes in its price. The good is neither consumed nor used in production while in the possession of the speculator. Years ago, Nicholas Kaldor (1939) provided the definition:

> Speculation . . . may be defined as the purchase (or sale) of goods with a view to re-sale (or re-purchase) at a later date, where the motive behind such action is the expectation of a change in the relevant prices relative to the ruling price------------- and not a gain accruing through their use, or any kind of transformation effected in them or their transfer between different markets.

This definition is fine for currency, commodity, and other markets in which holding and using are mutually exclusive activities. But if holding a good for future sale at a gain does not prevent using it in the interim, then this definition is deficient. It is particularly unsuitable for speculation in durable goods (like real property) which can provide a stream of useful services over time while being held for a capital gain. If we choose a definition of speculation that precludes simultaneous uses, as does Kaldor's, we effectively disallow durable goods speculation and thus narrow too much the field of activities which are actually speculative. This article aims at: a) constructing a simple model of resource allocation ,b) determining the effect of population growth on developing land values, c) deriving speculative reaction to the growth in land values, and d) relating social costs for the city and speculative bidding for uptown land.

2. Literature Review

Land speculation has been entwined with land development throughout American history. Historians have criticized the extensive prevalence of speculative land sales in the development of American frontier in the 19thcentury (Swierenga, 1968), but speculative land sales universally influenced settlement in the 17th and 18th centuries. There have been impressions of speculative fever since the colonial times. Some argue that land speculation was a major stirring force behind the development of the West. But notwithstanding the fact that it is an American ritual, land speculation has been much maligned. For example:

> " "Speculation leads to squander a valuable resource. There is waste in taking land out of productive use before it is ready for another; squander in tying up capital for long periods in a barren enterprise, with more in taxes, interest and extraordinary assessments; worst in the division of land into lots that are too small, or of poor design, or poorly to be found; waste in zoning too much for business use; and waste in re plotting land which has been precipitated subdivided. There are other wastes too: increased overall government costs, all of which affect the community unfavorably." " (Yearwood, 1968)

The above denunciation is extreme, but is indicative of the type of rejoinder that this institution can arouse. Although it is doubtful that land speculation is as malevolent as some believe, there are some well-documented studies of the effects of speculation. Three items relating to speculation in urban land appear to have been established: (1) uptown land awaiting conversion to urban use increases rapidly in price; (2) it is sooner or later sold to developers for many times the value of land for agricultural use; and (3) a great deal of land, perhaps half, is (inactive) at any given point in time.

Relating to the first, Schmid (1968) presented data which demonstrate that in the period 1958-1964 the prices of sites for development in the US increased five times faster than the consumer prices and three times faster than the construction costs. Clonts (1970) predicted the land price of Virginia at the outer edge of Washington, D. C. and found that variables related to urban development explained thirty percent of the deviation in the value of land and improvements. Adams et al. (1968) have studied the movement of (underdone) land prices in the Philadelphia border between 1948 and 1962. They found that after adjusting for various characteristics of the land, prices rose between thirteen and sixteen percent during this period. They concluded that the "long run trend of prices is close to a normal return in accord with the notion that the development trend of Northwest Philadelphia was anticipated early and capitalized into real estate values". That is, the confirmation is consistent with what would be expected in a well-functioning market.

The association between uptown land values and agricultural values has been studied by Maisel (1964) and Schmid (1968). Maisel reported that land values in San Francisco were ten times greater than agricultural values, whereas Schmid reported values of land was ten times greater than agricultural values in selected US cities, together with the guesstimate that speculative activity increased land values to about ten times the agricultural value. On the other hand, in any given city the rate of population growth, income, and other factors would affect the relationship between uptown land values and agricultural values. Concerning the third item, Clawson (1962) estimated that about half the land in US cities was idle at any given time. Given the evidence that suburban land values have risen rapidly while much land is idle, some important questions remain. Is speculative activity responsible for what we observe? How does this rapid rise in price affect resource allocation and city size? The large amount of idle land in cities, often described as urban sprawl or leap-frogging, is commonly attributed to speculation. However, it is difficult to conceive how speculation carried out by rational profit maximizers in a well-functioning market could result in much idle land.

If we get rid of obfuscating factors, by assuming land to be harmonized in all respects except distance to employment centers, then it is doubtful that profit maximization would result in adjacent plots being sold at widely disparate times to developers. Rather, leapfrogging is more likely to be due to imperfections in the market.

First, the land market is a thin market. Sales occur once in a blue moon, thereby making it tricky for all parcels to be accurately priced. A farmer or a speculator who receives an attractive offer may sell ahead of time if he thinks another offer may not be forthcoming soon. In adding together, he may not know what other similar parcels are selling for since information is imperfect. Second, there is substantial uncertainty among speculators about the expected income stream. Many factors affect future income, for example, governmental policies, population growth, etc. Profit-maximizing speculators could easily differ in their expectations and sell at different times. Third, the most advantageous holding period is influenced by the discount rate applied to the income stream. Speculators may face differing costs of funds which would lead to different holding periods. Last, high taxes might drive inadequately capitalized speculators or farmers out of the market impulsively. Thus, although the costs of the slump and leapfrogging may be substantial, speculation, per se, may not be the cause. Actions to improve the functioning of the market rather than the elimination of speculators may be sufficient to reduce sprawl (Clawson, 1971). The second question concerns the effect of high land prices on resource distribution. Neutze (1970) argued that there was a misallocation:

> " "There appears to be no reason, in terms of resource allotment, why the cheapest land that is regarded as being urban should exceed its opportunity cost. Other land will be more expensive because of the differential value accorded to land that is favorably located for development as a result. If land prices are too high in this sense, development will occur at too high a density in order to economize on land: too much amounts of resources will be used in building." "

In a severely static context, Neutze is correct. However, in a growing city where redevelopment is necessary sporadically, it may be desirable to build a higher density initially in order to postpone redevelopment and the coupled costs to a later date. High land prices would give confidence the opening high densities.

As supplement, several authors argued that certain resources are underpriced in urban areas (Mills and

Ferranti, 1971). Nearly everyone's attention has been drawn on public services, pollution, and congestion of the transport system. If in actuality, these resources are underpriced, too numerous people will be attracted to cities. On the other hand, if built-up land is priced above its opportunity cost, lands, and therefore housing, are overpriced; people will be repelled from cities. This overpricing might be a second-best that offsets under pricing elsewhere. Thus it is possible that, by bidding up the price of land, speculators are improving resource share.

3. Study Area and Methodology

3.1. Study Area

Shashemene is a city and a separate district in West Arsi Zone, Oromia Region, Ethiopia. It's about 250 km away from the Capital of Addis Ababa.It has a latitude of 7° 12' north and a longitude of 38° 36' east. Besides, Shashemene is surrounded by lands in all directions and covering a total surface area of about 12,994.61 hectares. The distance is about 12km from its North to South extreme points, and 8km from its East to West extreme points (CSA, 2007)

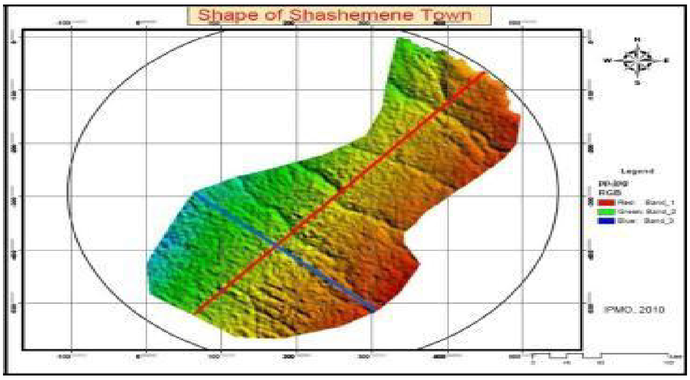

Fig. 1.Size and shape of Shashemene
Primary source: Shahemene City Land Agency

3.2. Methodology

This paper adopts a simplified model of resource allocation in an urban area. The assumptions are as follows:

a) The city is rectangular in a sketch with unit width and endogenous length.
b) At one end of the city is the employment center, the Central Business District (CBD), where all goods production takes place and the rest of the city is entirely residential
c) Workers go back and forth to work in the CBD on the transport system which requires no surface land.
d) Transport cost is linear with distance and equal to**'s'** dollars per mile.
e) Distance is normalized to count the edge of the CBD as zero and there is one worker per household and each household requires one unit of housing.

The expansion of the city is due to the growth of population. The ratio of workers to the total population is constant, as in Eq. (4.1)

$$N = N(t) \qquad (4.1)$$

Where *N* is the number of workers and *t* is time. Eq. (4.1) defines the number of workers at each point in time. Housing is fashioned by using capital and land. Changeover of factors is possible at anytime (that is, the model is a (dynamic) model in which development can take place slowly but steadily without loss of efficiency) accordingly. In Eq. (4.2),

$$H(U) = \overline{A}L(U)^{a}K(U)^{1-a} \qquad (4.2)$$

Where
H (u) =is housing output **u,** miles from the CBD,
L (u) =is land used in housing at **u**, and
K (u) =is capital used in housing at **u,**
α, $\overline{A}$ are constants.

The necessity that factors be paid their marginal product gives

$$R(U) = Ph(U)^{a}\frac{H(U)}{L(U)}, \qquad (4.3)$$

and

$$r = Ph(U)(1-a)\frac{H(U)}{L(U)}, \qquad (4.4)$$

In Eq.(4.3) and (4.4)

Ph (HU) is the rental price of housing at HU,
R (HU) is the annual rent on land at HU, and
r is the rental price of capital, which is constant.

Combining equations (4.2), (4.3), and (4.4) the rental price of housing in terms of factor prices, hence

$$Ph(u) = AR(U)^{a} \quad (4.5)$$

Where

$$A = \frac{r^{1-a}}{\bar{A}a^{a}(1-a)^{1-a}}$$

For locational equilibrium it is required that

$$\frac{d[Ph(U)]}{du} = -S \quad (4.6)$$

Combining equations (4.5) and (4.6), and solving for land rents gives

$$R(U) = \left(\frac{c-su}{A}\right)1/a,$$

Where **C** is a constant of amalgamation. If $\hat{R} = R(\hat{U}) = \left(\frac{c-s\hat{U}}{A}\right)^{1}/_{a}$, we get

$$R(u) = \left[\hat{R}^{a} + \frac{s}{A}(\hat{U} - U)\right]^{1}/_{a} \quad (4.7)$$

Where **u,** is the remoteness to the edge of the city at time **t**. All workers must be housed in the city, therefore

$$\int_0^{U} H(u)\,du = N(t) \quad (4.8)$$

Solving equations (3) and (5) for H, using the actuality that the city is of unit width so that L (u)= 1 and substituting the result in equation (8) gives

$$\int_0^{U} R\frac{R(u)^{1-a}}{Aa}\,du = N(t) \quad (4.9)$$

Substituting from equation (7), integrating, and rearranging, we get

$$\hat{U}(t) = \frac{A}{S}\{[\hat{R} + sN(t)]^{a}] - \hat{R}^{a}\} \quad (4.10)$$

which is the radius of the city as a function of the population. Equations (7) and (10) then settle on the land-rent structure of the city over space and time. That is,

$$R(V,t) = \left\{[\hat{R} + sN(t)]^{a} - \frac{su}{A}\right\}^{1}/_{a}, \quad (4.11)$$

or

$$\ln R = \frac{1}{a}\ln\{[\hat{R} + sN(t)]^{a} - \frac{su}{A} \quad (4.11a)$$

4. Results and Discussion

4.1. The developed value of land

The conversion of land to urban uses is a highly complex process involving a large number of private individuals as well as private and public institutions (a detailed description of which can be found in Clawson, 1971). However, the following scenario can be abstracted from the complexities. Four principle roles are played by a variety of actors. These include the homebuyer, the developer, the land investor/speculator, and the farmer or rural landowner. In the first stage land is held by the rural landowner. Land use is stable; and land rent is a constant R0**.** In the second stage the city's expansion begins to consume nearby vacant agricultural land. Investors/speculators see the possibility of higher prices for land in urban uses and begin bidding up land values. Conversion takes place after the land is sold to developers. The developer holds the land only briefly while housing is under construction. The process is completed when the land and improvements are sold to homeowners

For any given plot of land one actor may play more than one role. Whether or not plots of land actually change hands is unimportant. The essential feature is the ability and willingness of investors/speculators to accept a negative cash flow for a period of time in anticipation of future capital gains. At any given point in time, equation (7) describes the rental value of land over space. This relationship is shown in figure (3, and it establishes the rental value of land in urban use at any point in time. The question that remains is what homebuyers will be willing to pay for the developed land. If homebuyers are rational participants with perfect foresight they should be willing to pay a price for the land equal to the present value of future rents. This of course would be an extreme assumption, which requires that consumers should be aware of differential appreciation rates between locations. Homebuyers do appear to be aware of the appreciation potential of land, but casual empiricism indicates that there is little awareness, if any, among homebuyers that appreciation rates might vary in a systematic manner with location.

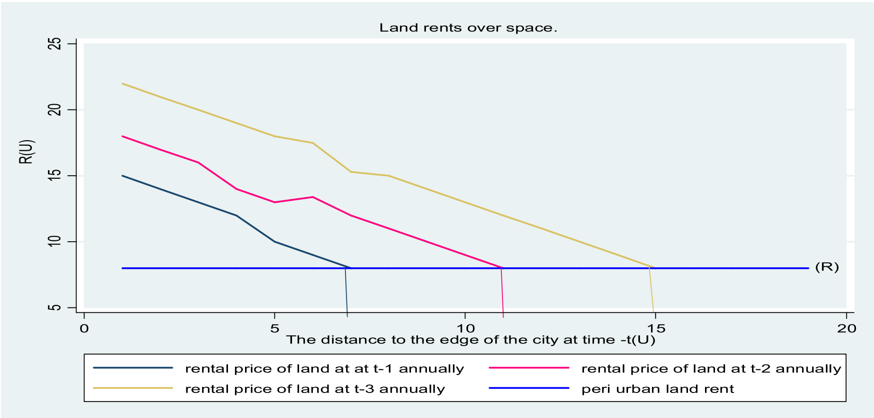

Figure 3: Land rent over space

Source: Own computation from data collected from study area (2009)

A more realistic postulation about the operation of the housing market would be that buyers contrast, current rents, taxes, and values among locations, and are willing to pay the capitalized value of current rents, less current taxes. In other words the value of developed land to homebuyers will be:

$$Vd\ (v,\ t)\ = \frac{R(v,t)}{r+v},$$ where **v** is the tax rate**.**

The developed value of land will follow a trajectory similar to that in figure 4, where the function is convex for small exponential growth rates or convex growth. If the city is growing linearly .The logarithm of land rents and values at any given location will increase at a decreasing rate. In this case a finite speculative price is guaranteed as long as the ultimate growth rate is less than the discount rate.

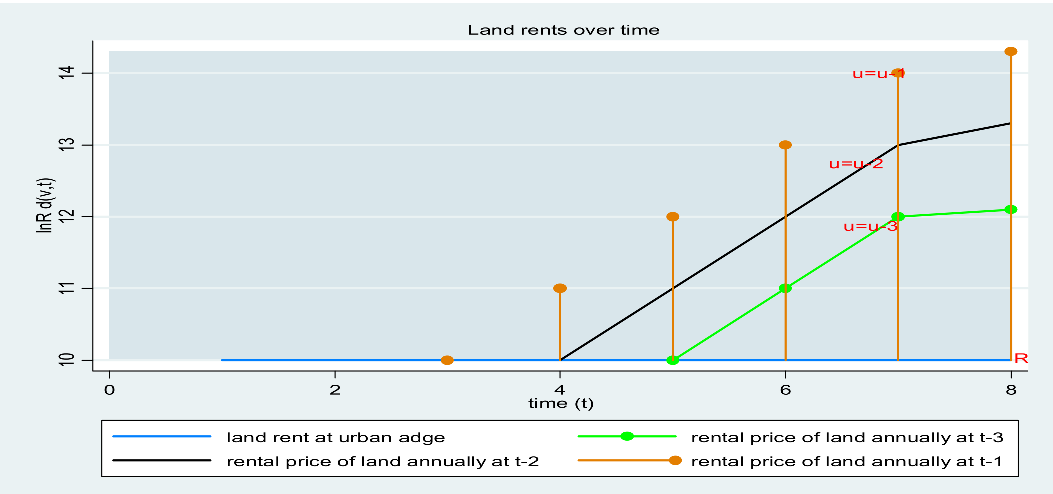

Figure 4 :Land rents over time

Source : Own computation from data collected from study area (2009)

4.2. The Speculative value of land

Given the rate of appreciation of the developed land, Vd (V, t) speculators with perfect foresight will bid up the price of land until appreciation is equal to holding costs. That is, if the land is rising rapidly in price, speculators can make capital gains from buying and holding until appreciation plus rental from undeveloped (for example, agricultural) is no longer offset interest expenses, are **r,** and taxes **,v.** If a sufficient number of speculators are active in the market, prices will rise to the point where the current rentals plus appreciation, minus taxes afford only a normal rate of return on capital. Accordingly

$$\frac{dVs}{dt} + Ro - vVs = rVs \qquad (12)$$

Where.R0 is the rent on land in nonurban use assuming taxes to be based on the market or speculative value, **Vs** (which is often not the case). Present value is maximized when theland is held until the appreciation of the developed value is equal to interest plus taxes, minus undeveloped rentals, hence

$$\frac{dVd}{dt} = (r + v)Vd - Ro \qquad (13)$$

The development date is denoted td and is shown in figure 3, which describes the situation where Ro is negligible. Speculators, therefore, will begin to bid the price of land at **u** above its opportunity cost, **Vo**, long before the city reaches that plot of land. In addition the land will be withheld from development for a period of time,**t1-to** longer than in the absence of speculation. Land is first developed at price**ṽs** rather than **Vo**=$\left[\frac{Ro}{(r+V)}\right]$

Notice in figure 4 that an increase in the tax rate from **v1 to v2** would seem to decrease the speculative value of land, and to move the date of development forward. However, this neglects the impact of the tax rate on developed values. Actually if buyers value land by discounting the excess of rental value over an allowance for taxes according to

Vd =$\frac{1}{r}(R - vVd)$,or Vd =$\frac{R}{r+v}$, then the equation (13) becomes

$\frac{1}{r+v}\frac{dR}{dt}$= R-Ro or $\frac{dR}{dt}\frac{1}{R-Ro} = r + v$,

and if the left hand side is decreasing over time, increasing **v** advances the date at which this condition is met. Another effect enters if the tax is applied to improvements, in which case **r+v** must replace **r** in equation (4), leading to less capital-intensive development and an earlier outward movement of the edge of the city; and earlier development of any given parcel

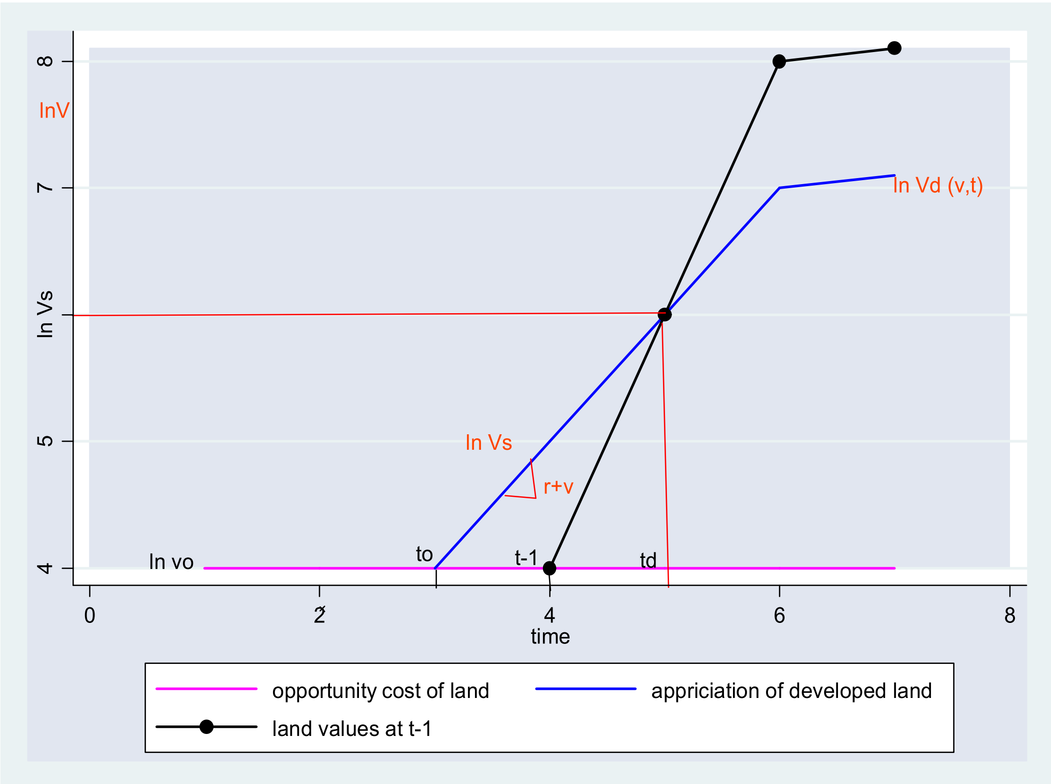

Figure 5: The speculative price
Primary source: cadastre of Shashemene City Land Agency

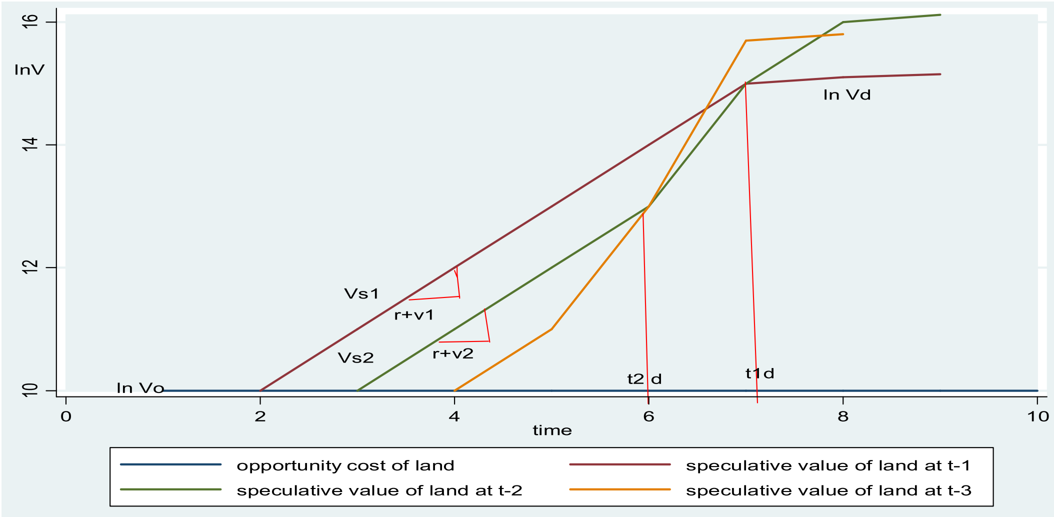

Figure 6: The effect of tax changes on the speculative price
Primary source: cadastre of Shashemene City Land Agency

To sum up this section, speculators raise the price of land to developers above the value of the land in its undeveloped use and postpone the date of development, this effect being smaller the higher the tax rate. This latter result, which is contrary to the usual proposition that a tax on land values is neutral, depends on the assumption of the buyer that the tax will remain fixed at the level of the date of purchase, whereas the seller allows for increases in the tax if he holds on longer.

4.3. The upshot of speculation on resource allotment

Resource allotment in urban areas has been the focus of a succession of recent papers. The effects of overcrowding in the transport system have been a chief worry, for instance, Mills and Doe Ferranti (1971), Solow and Vickrey (1971), and Livesey (1973).A universal constituent has been the inquiry of the best city through the minimization of social cost. In the model developed here social costs consist of transport costs, capital costs, and land costs. Total transport costs are

$$\int_0^{\hat{U}} suH(u)\,du, \qquad (14)$$

Capital costs are

$$\int_0^{\hat{U}} rK(u)\,du \qquad (15)$$

and the opportunity cost of land is

$$\int_0^{\hat{U}} Roudu = Ro\hat{U} \qquad (16)$$

Where Ro is the rent on land in an alternative, nonurban use. Social costs at a given point in time are then given by the sum of equations (14), (15), and (16), namely

$$C\,(t) = \int_0^{\hat{U}} suH(u) + rK(u) + Roudu \qquad (17)$$

Where C (t) is total social cost at time t. Making use of equations (3), (4), and (5) then gives

$$C\,(t) = \int_0^{\hat{U}} [(\frac{su}{\alpha A})Ru^{1-\alpha} \;+ \frac{1-\alpha}{\alpha}R(u)]du + Ro\hat{U} \qquad (18)$$

From the previous section we know that land will be supplied to developers at the speculative price, so that

$$\hat{R} = Rs\,(V, td)\,. \qquad (19)$$

It is possible to vary the price of land at the edge of the city, **R**, by varying the tax rate, **v**. If we define

$$\Delta = \hat{R} - Ro \qquad (20)$$

Then **Δ**is the market premium over the opportunity cost of land which must be paid to speculators. This market premium takes on values as the tax rate varies. Thus the premium paid to speculators can be decreased or eliminated by an appropriate tax policy. Such an appropriate tax policy is one which minimizes the present value of social costs; that is, find **Δ(t)**such that

$$\int_o^T C(t) \exp(-pt)\, dt \quad (21)$$

is minimized, where ρ is the social rate of discount. This is a degenerate problem in the calculus of variations, the solution of which is independent of time. A closed form solution has not been obtained, but numerical experimentation yields the result that a minimum exists at

$$= \hat{R} = Ro \quad , \quad (22)$$

or **Δ=0**, Thus social costs are minimized if the entire speculative value above opportunity costs are taxed away.

4.4. Some arithmetical result -the social cost of speculation

Some motivating issues cannot be answered critics by the model. On the other hand, additional consequences can be obtained by using arithmetical methods. Of particular interest is the question of how large an increase in social costs is caused by speculation. To this end a numerical analysis of a model similar to that presented above was done. The only distinction introduced is that in the simulated model the city is a two-dimensional circular city rather than the less realistic linear city considered earlier. If not the assumptions are indistinguishable. The transport cost is linear in distance; and housing is produced by using capital and land in accordance with equation (2).

The virtual city was taken to have 3200 workers in the CBD. The majority other parameter values were those which were found to be rational from an earlier study (see Capozza, 1976). One exception was the factor share of land in the production of housing. Total social costs are responsive to this parameter and it is not easy to allot a precise value. More than a few authors, however, have suggested that the likely range is from fifteen to twenty-five percent (Mills, 1972). To bracket the probable values, simulations were done with the factor share of land at each end of the range. The greater the factor share of land the larger is the loss of speculative bidding for land. One final value is important—the relationship between the opportunity cost of land, Ro, and the speculative supply price of land to developers $\hat{R}$. Maisel (1964) estimates the price of land to developers to be about ten times the price of agricultural land, agriculture being taken to be the best alternative use. Accordingly in study area land to developer is about 10.3 times the price of agricultural land, which is similar to the result found by the author Maisel. Social costs are tabulated for this range of speculative values and for the two values of the factor share of land, shown in table 1. In the table note that speculation, which increases land values to ten times its opportunity cost, will increase social costs by 5.6% (when the factor share of land is 15%) to 11.3% (when the share of land is 25%).

As the speculative value of land rises the radius of the city decreases because population densities are increasing. The opportunity cost of land also decreases as less land is used. Capital costs, on the other hand, rise owing to diminishing returns since more capital is applied to the same land. Transport costs decrease as R increases, since workers commute shorter distances in the more compact cities. Total social costs decrease, then rise, and a turning point is reached when land is valued at its opportunity cost.

Table -1.Social costs for values of $\hat{R}$ when the factor share of land is (a) 15% and (b) 25%. Values in parentheses are percentage differences from values when $\hat{R} = \hat{R}0$

a) factor share of land is 15%

Speculative value of land(R̂)	Radius of the city	Opportunity cost of land(1)	Capital costs(1)	Transport costs(1)	Total social costs(1
0	77.7(71.5)	17.3(44.1)	162.4 (-2.5)	56.1 (1.3)	235.8 (0.8)
Ro	45.3	12.0	166.6	55.4	234.0
2 Ro	41.99(-7.6)	11.6(-3.33)	169.2(1.7)	43.9 (-20.9)	234.7(0.3)
4 Ro	38.4(-0.15)	11.3(-5.8)	173.3(4.3)	51.8(-6.5)	236.4 (1.2)
6 Ro	36.3(-25.5)	11.1(-7.5)	176.6(6.4)	50.2(-11.9)	237.8(1.9)
8 Ro	34.7(-23.4)	11(-8.3)	179.1(7.5)	48.8(-14.5)	237.8(1.9)
10Ro	33.6(-25.8)	10.9(-9.2)	187.5(12.5)	48.7(-12.0)	247.1(5.6)

b) Factor share of land is 25%

0	159.6(58.1)	45.8(97.4)	269.6(-8.1)	156.5(5.3)	471.9(6.02)
R	100.9	23.2	293.4	148.6	445.1
2R	91.7(-9.2)	20.7(-10.80)	307.0(4.6)	141.4(-4.8)	469(5.4)
4Ro	81.9(18.8)	18.3(-21.1)	326.4(11.3)	131.4(11.6)	476.0(6.9)
6Ro	76.09-27.6)	17.0(-26.7)	341.6(16.4)	124.5(-16.2)	483.0(8.5)
8Ro	71.9(-28.7)	16.1(-30.6)	354.2(20.7)	119.2(-19.2)	489.5(9.9)
10Ro	68.79-31.9)	15.5(-33.2)	365.3(24.6)	114.9(-22.7)	495.7(11.3)

Primary source: Case study
NB: 1-represents thousands of birr per day.

4.5. Improving resources
By bidding up the price of land, land speculators can allocate resources among citizens. This can be annotated as follows:
Assumptions

a) Households do not do as you are told the low of demand and no consumer substitution.
b) In spite of the price of housing, each household occupies a standard dwelling, with 160 m^2or 178 square feet of living space
c) The typical household has a monotonous amount of (1513birr) to spent on housing rent and commuting each month
d) The cost of commuting is 120 birr per month per 500meter from CBD
e) price of housing is defined as the price per square foot of housing per month
f) If a household rents a 178 square foot house (a "standard" house) for 1000 birr, the price of housing is 5.6 per square foot (1000birr/178).

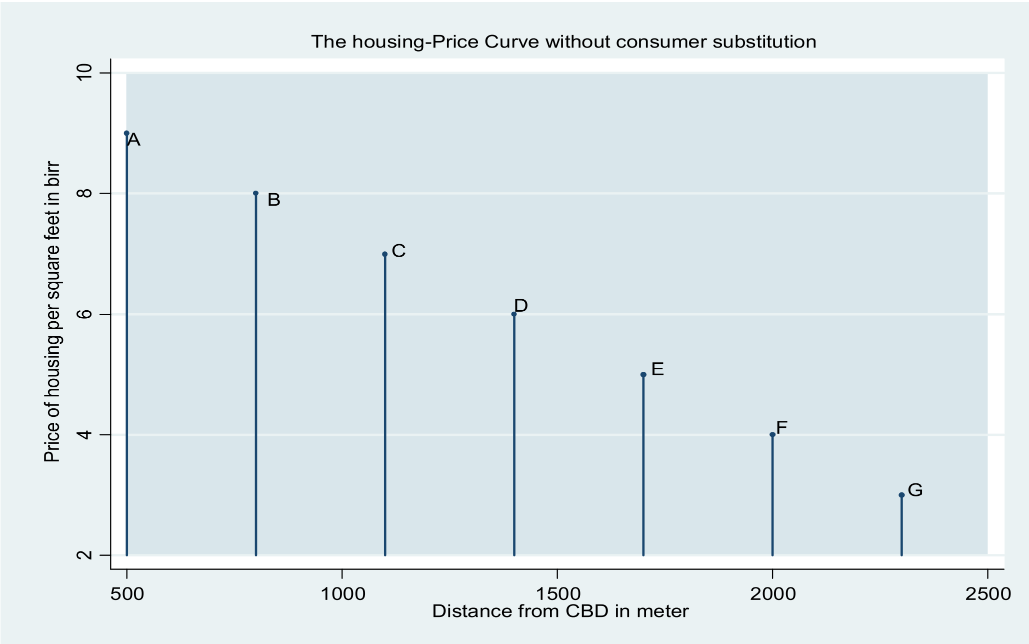

Figure 2.The housing-Price Curve without consumer substitution,
Source: case study

Figure 2 shows the equilibrium housing-price curve. For the normal dwelling next to the employment area ,commuting cost is zero, so the household can spend the entire 1513 birr budget on housing ,paying 8.5 birr per square foot for a 178square-foot dwelling (point A).In contrast ,at a distance of 1000 meters from the employment area, commuting cost is 240birr (equal to 120birr per 300meters times two),so the household has 1213 birr of its 1513 birr budget left for over to spend on housing and is willing to pay 5.6 per square foot for standard dwelling (point E).Similarly ,at a distance of 2000 meters, the household is willing to pay 4 birr, as shown by point F.

To see the logic of the negatively sloped housing-price curve, deem what would come about if it were horizontal, with a constant price of 5.6 birr per square feet at all locations in the City. For a household living 2000meters in the employment area, a move to a location next to employment area would eliminate 480 birr of commuting cost without any modification in housing costs. Other households have the same incentives to move closer to employment area. The demand for housing near the employment center will increase, pulling housing prices and land price. At the same time, the demand will decrease at more remote locations, pushing down housing prices. In other words, a horizontal housing -price curve will be transformed in to a negatively sloped curve.

The symmetry housing-price curve makes the inhabitants indifferent locations. A move toward away from the employment area changes commuting cost by the change in distance (Δx) times the commuting cost per metre (t) and changes housing cost by the change in price of housing (Δp) times housing consumption (h) . For locational indifference, the two changes must sum to zero:

$$\Delta p.h+\Delta x.t=0$$

We can rewrite this expression to show that the change in housing cost equals the negative of the change in commuting cost:

$$\Delta p.h=-\Delta x.t$$

In figure 1, if a household moves from 1300m to 800m and the price increased by 1.349 birr, a 240 increase in housing cost is exactly offset by a 240birr decrease in commuting cost.

1.349birr.178= - (-2).(120) =2.40birr

We can use trade –off expression to get an equation for the slope of the housing –price curve. Dividing each side of the expression by Δx and h,

$$\frac{\Delta p}{\Delta x} = \frac{t}{h}$$

In our example, t=120birr h=178 square feet, so the slope of housing -price curve is 0.0793 birr:

$$\frac{\Delta p}{\Delta x} = -\frac{t}{h}\frac{120birr}{1513} \ -0.0793$$

In figure 2, 600 meters toward the employment center increases the price per square foot of housing by 0.0793.That is, decreasing housing costs must offset increased transport cost as distance to the CBD increases. (Implicit in the assumption that each household demands affixed quantity of housing.)

5. Conclusion

In this paper I have tried to show that speculation in urban land raises the price of land to developers and postpones the date of the development. This speculative bidding for land affects resource allocation by causing the land to be developed at a date later than optimal.

The possibility that an urban resource, land, is overpriced because of speculation is particularly interesting. A great deal of literature in urban economics argues the opposite; namely, that due to congestion, pollution, or other diseconomies, resource is underpriced. This, the overpricing of land may improve resource allocation by offsetting some of the under pricing elsewhere, and as a result cities may be closer to optimal size. It would be useful for future research to consider how the pricing of one resource affects another and how social costs are influenced under various conditions.

Further, it has been shown that the essence of the land problem in the study area is land speculation. Land speculation has resulted in market failure, both in efficiency and equity. The cyclical land speculation booms in study area have been based on three myths about urban land: the myth of land shortage, the myth of continuous increase in land price ,and the myth of the futility of land policies. The basic reasons for rapid increases in land prices in study area are the rapidity with which the demand for urban uses has grown, the limitations placed by the government on rural –to-urban conversion, and the private appreciation of socially created land value. It has been argued, moreover, that a viable and fairly simple land policy does exist and can be used to dispel the three myth. To dampen the speculative demand for land and to appropriate socially the increases in value of land, the effective tax rate of the Global Land Value Tax should be raised, and all loopholes in the real estate Capital Gains Tax must be closed. Also, the land use control system should be reformed to promote rural-to-urban conversion

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