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Master's Programme in Industrial Engineering and Management

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# **Minimally Distortionary Implementation of Land Value Taxation**

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<p><b>Abstract</b></p> <p>This thesis assesses the practical problems and economic risks involved in implementing land value taxation, and how these can be mitigated and avoided.</p> <p>The thesis's main recommendations include designing efficient and objective models and formulas to determine taxable value, as well as planning the roll out of the tax (including its timing) so that unpredictable swings in real estate prices, and hence windfall gains and losses, are minimized.</p> <p>I draw on literature and previous research as well as finance theory to compare previously discussed implementations and to suggest new, innovative approaches to these challenges, which are major bottlenecks in advancing towards a more efficient and fair taxation paradigm.</p>		
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<p><b>Tiivistelmä</b></p> <p>Tämä diplomityö arvioi käytännön haasteita ja taloudellisia riskejä, joita liittyy maan arvon verotuksen käyttöönottoon, ja ehdottaa keinoja näiden haasteiden ja riskien minimoimiseksi ja välttämiseksi.</p> <p>Diplomityön keskeisimmät suositukset liittyvät tehokkaiden ja objektiivisten mallien ja yhtälöiden suunnitteluun kiinteistöjen verotettavan arvon määrittämiseksi sekä maanarvoveron käyttöönoton (ml. sen ajoituksen) toteuttamiseen niin, että ennustamattomat heilahdukset kiinteistöjen arvoissa ja siten ansiottomat varallisuuden siirrot minimoidaan.</p> <p>Hyödynnän aiempaa kirjallisuutta ja tutkimusta sekä rahoitusteoriaa vertaillakseni aiempia toteutustapoja ja ehdottaakseni uusia, innovatiivisia lähestymistapoja kyseisiin haasteisiin, jotka ovat merkittävä este siirtymiselle kohti tehokkaampaa ja reilumpaa verotusparadigmaa.</p>		
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# 1 Introduction

## 1.1 RESEARCH QUESTION, MOTIVATION FOR THE RESEARCH, AND THE HISTORY OF LAND VALUE TAXATION

The problematic nature of land ownership has been acknowledged for centuries. Already Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations* noticed that:

“The rent of the land, therefore, considered as the price paid for the use of the land, is naturally a monopoly price. It is not at all proportioned to what the landlord may have laid out upon the improvement of the land, or to what he can afford to take; but to what the farmer can afford to give.” – Adam Smith (1776, p. 205)

Also, the idea of solving or mitigating the problems of private land ownership by taxing this land value has been around since Adam Smith:

“Ground-rents are a still more proper subject of taxation than the rent of houses. A tax upon ground-rents would not raise the rents of houses. It would fall altogether upon the owner of the ground-rent, who acts always as a monopolist, and exacts the greatest rent which can be got for the use of his ground.” (Adam Smith 1776, p. 692)

Actually, the term “land” is confusing in a number of ways. Firstly, classical economists and Georgist political economy used the word “land” to refer to all natural resources and anything else that has not been produced with human labor. This includes natural forests, game and fish populations, metal ore reserves, satellite orbits around the planet, and frequencies of the radio spectrum.

The land value in real estate is quite a specific case of such non-producible resources.

Secondly, even in this case, the concept of “land value” in the case of real estate misleadingly draws the attention to the ground. The land value we usually talk about in the case of real estate could more descriptively be called *location value*.

This location value is not so much determined by soil quality or physical properties of the lot in question, but on what there is around this lot and how well the lot is connected to other areas. Natural geographic features play a part in this location value, but the

development of the local society and economy, the actions and investments of other people, are what matter the most for location value in an urbanized economy. (Foldvary 2006, p. 4) The specific components of location value presented in more detail under “4 Components of Location Value”.

Essentially, location is much more comparable to other *privileges*, such as patents, taxi medallions, and academic degrees, than natural resources like fish and metal ore. Location essentially means access. It means access to certain markets, including job markets and private services, as well as local public services. The value of location depends very little of the owner of the specific piece of real estate. Anyone who wishes to participate in the labor market of a thriving metropolis has to pay rent for an apartment in the area, rent for a large part composed of the value of limited location. Anyone company that wishes to operate a business in such a productive urban economy needs to pay rent for the facilities the

Similarly, a broadband internet connection provider with a local monopoly can charge its clients for all the services available on the internet. The price a holder of such a gatekeeper resources is able to charge is not dependent on the quality of the services he provides or the costs of providing such a service, but (1) the perceived value of the services to which the service grants access and (2) the overall purchasing power of the clients.

The more an economy develops and increases productivity in other resources (such as labor, energy, materials), the more people are willing to pay for access to limited, irreplaceable resources, and gatekeeper resources like land. Thus the market value of such resources and their meaning and power in the economy rises.

Furthermore, as location does not decay and as it has no substitutes, it is essentially a perpetuity: it grants a constant, growing cash from now until eternity. Such perpetuities are extremely volatile to changes in (1) expected growth rates of the whole economy and hence rents, and (2) changes in the market interest rates on which the discount rates for such assets directly depend. This volatility increases at low interest rates. This valuation of real land is assessed in more detail under “6 Effects of LVT and Other Real Estate Taxes on Market Values”.

Since Adam Smith, many economists have suggested and spoken for land value taxation. Researchers who don't want to sound too radical often rather talk about “two-rate taxation” of real estate, which implies that buildings and other improvements are still taxed as well, but at a different (often lower) tax rate than the land value of the real estate. (Cohen & Coughlin 2005)

Henry George was one of the most famous advocates. His book *Progress and Poverty*, published first in 1879, was the best-selling economics book in its time.

Other famous advocates include John Stuart Mill and David Ricardo.

Even Milton Friedman, known as an advocate of minimal state intervention and taxation, called the land value tax “the least bad tax”.

Today, many economists agree on the theoretical efficiency of land value taxation. However, it is not very frequently discussed when debating public policy. This might be partly due to interest-group-political factors. However, one major issue making land value taxation unpopular is the fact that, for example in the United States, many people consider the valuation methods used in determining taxable values to be unfair. (Cohen & Coughlin 2005)

How such a tax is implemented is therefore crucial (a) for land value taxation to be implemented sustainably without it meeting immediate and widespread resistance and (b) for it to be able to achieve the benefits that theory predicts in practice (See section 2).  
E.g.

- If taxable values do not correspond to the actual market values of real estate, the efficiency of the tax and its positive incentive effects are also reduced.
- It is easy to accidentally leave room for corruption and other types of manipulation in the methods by which taxable values are assessed, hence increasing rather than decreasing rent-seeking opportunities.
- Significant real estate taxes change how private investors value pieces of real estate. (See section 6) Sudden implementations of or changes in land value taxation can hence mean massive swings in real estate prices and hence constitute unjust windfall gains and losses to the private investors.
- Uncertainty regarding the valuation models or changes in taxation can hold back real estate development.

This thesis assesses the practical problems and economic risks involved in implementing land value taxation, and makes suggestions on how these can be mitigated and avoided by:

1. designing efficient and objective ways to determine taxable value, and
2. planning the roll out of the tax (including its timing) so that unpredictable swings in real estate prices are minimized.



## 2 Potential Benefits of Land Value Taxation

### 2.1 A MORE EFFICIENT REAL ESTATE AND ACCOMMODATION MARKET

The main arguments for the private, exclusive ownership of anything are the claims that it:

- encourages people to take good care of things, and
- it encourages keeping things in as productive use as possible.

The trouble with the private, untaxed ownership of location is that it *doesn't* lead to efficient use of locations.

Location is one of those few asset types that can rise in value without any additional real investment in them, i.e., work done to improve them. As location essentially means access to certain markets and locally available services, the value of this access rises with the overall development of those markets, e.g. in productivity and versatility.

Moreover, merely this expected rise in value of real estate can provide enough of a return to cover for the capital costs (that is, profit requirements) of owning that piece of land, especially under low interest rates.

Real estate owners have in fact a significant incentive to *underutilize* their resources.

Firstly, there are significant risks involved in leasing out an apartment or facility to a tenant. At low capital costs, it's a safer investment to just possess high-end real estate. In China, there is even a widespread belief (or cultural attitude?) that the value of an apartment is eroded by people living in it. (CBS 2015)

Secondly, a large real estate investor or a de facto cartelized construction sector can maintain higher revenues by purposefully sustaining an apartment deficit. (Salmela 2012) Accommodation has a fairly low price elasticity of demand, (WP-1) which means that people's ability and willingness to pay for living in a certain metropolitan area does not fall very rapidly with the rise in rents. Therefore, keeping a few hundred more apartments empty in a city can significantly raise the rents that can be asked for the occupied apartments in that city. This applies even more so to office buildings.

For the accommodation and facility markets to work efficiently, there practically needs to be a cost to holding valuable locations. Imposing such a cost via LVT would make it very unprofitable to keep apartments and other facilities in central locations unoccupied.

Urbanization has been a central force in increasing mankind's overall productivity and in facilitating new innovations. The main mechanism is that bringing people closer together, i.e., increasing population density, allows (a) a more advanced division of labor and more complex kinds of economic cooperation, and (b) new collisions and interactions of ideas.

Unnecessarily lowered population density decreases the efficiency and potential of the whole urban economy. A LVT acts practically as a Pigovian harms tax (WP-2) on the negative externalities of inefficient land use resulting from unoccupied apartments and underdeveloped real estate.

## 2.2 DIMINISHING BUBBLES AND CREDIT CRISES

Location is essentially a limited resource with no price elasticity of supply. Of course, the amount of valuable locations can increase in time. However, such valuable location cannot be produced directly by human effort. The value of a location increases depending on how surrounding areas are developed.

As a price-inelastic resource with few substitutes, land essentially provides its owner with an infinite expected cash flow, i.e., a *perpetuity*. And in a developing city with expected net inflow of new inhabitants far into the future, we are usually talking about a *growing perpetuity*.

As will be explained under 6, valuation of such a perpetuities are extremely volatile to:

1. expected annual growth rates of the perpetuity
2. expected long-term interest rates, which affect the discount rates.

This is not the situation with producible production assets, such as machines and tools. As their supply has price elasticity, a momentarily rising valuation creates an incentive for producing more of such assets, which, in the long run, allows the profits yielded by such assets to fall down to the long-term expected discount rate, i.e., the expected profit required by investors.

However, when the supply cannot increase, the income generated by an asset does not fall with discount rates. Instead, the valuation of the asset, in this case location, rises. Especially at low interest rates, even small changes in the interest rate or in the expected growth rate of rents can cause huge changes in the valuations of real estate. When an

economy is growing, a large part of the return expected by investors and homeowners for their investment is in the expected rise in the market value of their asset, not so much in the direct rental income or in the “accommodation services” the home provides for a homeowner. When the expected growth rate in rents and real estate prices even slows down, its real estate values easily collapse to “correct” for this change in expectations.

This gives the real estate market its bubbling tendency. General macroeconomic cycles tend to be accompanied by significant booms and busts in the real estate market. (Foldvary 1991)

As real estate is a significant kind of collateral for a lot of credit in the economy – most notably mortgages taken by homeowners – a crash in real estate values usually also causes a credit crisis, which also puts the banking sector into a tight spot. Also private consumers are in a much worse position if, in addition to unemployment, they are facing a “negative equity” mortgage, i.e. a mortgage in which the principal of the loan exceeds the value of the piece of real estate used as collateral.

The volatility of the real estate market and its current tight bond with the financial markets hence aggravates economic recessions and increases the amount of credit defaults in economic downturns.

With high land value taxation, less of this volatile location value is in the hands of the private sector. This land value is practically “owned” by the public sector through the taxation. Hence, the public sector also carries a bigger part of the risks of its volatility. Actually, when land rent is mostly collected by the public sector the momentary valuation of this rent cash flow with current interest rates doesn’t even matter that much. It is only a problem when private agents need to constantly speculate on these valuations to make fair transactions and to determine how trustworthy a collateral such assets provide.

As this valuation depends a lot on (a) general economic trends and structural changes between areas and (b) actions conducted by the state (such as zoning, infrastructure investments, monetary and fiscal policy etc.), the public sector can be argued to be the best party to carry these kinds of systemic risks in any case.

A land value tax could be argued to both stabilize the overall macroeconomy and provide a more resilient financial sector. Of course, tax benefits and other public subsidies granted for mortgages and credit finance in general also play a big role in the fragility or robustness of credit markets.

## 2.3 NO DEADWEIGHT LOSSES AND REDUCED TRANSACTION TAXATION

The main arguments heard in political and economic discourse for lowering taxation include the disincentives that transaction taxes (e.g. income taxes, VAT, capital income taxes etc.) impose on trade and productive investment. When there is an extra tax burden on buying something from someone else, many kinds of trade that might be mutually value-producing otherwise end up being left not worth doing. This kind of net loss of value is called a *deadweight loss*.

As explained, the *price elasticity* of the supply of lucrative locations is zero. This means that an increase in price does not decrease the supplied amount. The existence of such locations is not dependent on the owner's efforts. Any cost imposed on holding location is hence directly born by the holder. The holder cannot pass any of these costs on to users of the location by raising rents: When supply is inelastic the rents are directly determined by people's willingness to pay for those existing quantities of the resources. Hence, rents are already as high as people are able and willing to pay.

Therefore, a land value tax would not cause a deadweight loss similar to that imposed by transaction taxes. At least in theory, it should have no disincentivising effects on productive trade and real investments. Quite the contrary, it should *increase* the efficiency of the real estate market encouraging improvements and reducing underutilization of apartments and facilities in prime locations, as explained under subsection 2.1.

Instead, a government deriving significant parts of its income from such taxes on location and other supply-inelastic resources (such as reserves of natural metal ores), allows it reduce inefficient and harmful taxes on trade significantly. This releases economic activity and development potential that is currently suppressed unnecessarily.

## **3 Challenges and Concerns with Land Value Taxation**

### **3.1 FAIRNESS OF VALUATIONS**

Probably the biggest challenge with land value taxation is fair assessment of the taxable land values of individual pieces of real estate. I will assess this issue thoroughly under “5 Determining Location Value”.

### **3.2 POLITICAL RISKS ON THE REAL ESTATE MARKET**

Another objection to land value taxation is that it allows affecting land prices (the market value of real estate) through politics. This is a major concern especially under currently prevailing interest-group-oriented politics focused on income and wealth transfers. Recurring, unpredictable adjustments in the tax affecting land values cause speculation and unfair windfall profits in the real estate market. This is a valid argument for keeping the land tax as constant as possible, and adjusting public revenues rather by changing other taxes (or e.g. paying surplus revenues back to citizens as a basic income or citizen’s dividend).

Also, it is noteworthy that as long as the LVT remains at a level high enough to make hoarding land – holding it without using it for anything productive – clearly unprofitable (in which case the tax does not affect the amount supplied to productive use), then smaller changes in the land tax should not affect the tradable price of land even closely as much as bursting the current bubbles resulting from hoarding would.

### **3.3 DEFENSES FOR REAL ESTATE SPECULATION**

Other “long-term objections” to land taxation are mainly ideological or based on some rather unrealistic assumptions. E.g. Murray N. Rothbard insists that any privately owned land being kept idle can only mean that it is waiting for more productive future uses due to high “change-over costs”:

“The speculative site-owner is, then, performing a great service to consumers and to the market in not committing the land to a poorer productive use. By waiting to place the land in a superior productive use,

he is allocating the land to the uses most desired by the consumers.”  
(Rothbard 1962, p. 571)

Rothbard insists that the landowner cannot reap unearned profits by keeping the land idle.

“Even if a speculator reaps an ‘unearned increment’ of capital value by holding land as its price rises, he can gain no such increment by keeping land idle. Why shouldn’t he use the land and earn rents in addition to his capital gain? Idle land by itself cannot benefit him.” (Rothbard 1997, p. 300)

As Rothbard says, adjustments in market value keep land just as profitable an investment option as any other asset.

“As a matter of fact, the landowner does not reap as much reward as the laborer from a progressing economy. For landowning is a business like any other, the return from which is regulated and minimized, in the long run, by competition. If land temporarily offers a higher rate of return, more people invest in it, thereby driving up its market price, or capital value, until the annual rate of return falls to the level of all other lines of business. The man who buys a site in mid-Manhattan now will earn no more than in any other business.” (Rothbard 1997, p. 300)

With his rhetoric, like a magician, Rothbard flashes the income effect of *the rise itself* (the “capital gains”) in front of the reader’s eyes and immediately hides them into his sleeve. Rothbard also ignores the fact that a significant landowner has a local monopoly position and can gain *higher* total rents by keeping part of the land out of use, as explained in subsection 2.1. This alternative is the most *profitable* option for the site owner but by no means the most *productive* for the whole economy: While he reaps additional profits, he is imposing externality costs on the rest of the economy.

### 3.4 PROBLEMS WITH A 100 % LAND RENT TAX

Most of Rothbard’s valid criticism is directed at a 100 % tax on *land rent*. Leaving no return for location value to the landowner would leave him no incentive to optimize the use of the location.<sup>1</sup> It would also be difficult to determine the value of land accurately

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<sup>1</sup> “He must also decide which use the land will best satisfy. In doing so, he also insures that each use is situated on its most productive *location*. A single tax would utterly destroy the market’s

and objectively when land value would not be notably reflected in market prices. These arguments don't apply to a 5-15 % tax on *land value* (LVT), which still leaves the holder every incentive to find better uses for the location and to charge as much rent for the location as he can. An owner and developer of a larger area will also continue to have the incentive to take into consideration the effects of his activities on the development and value of the whole area. The difference between the effects of land *rent* taxation and land *value* taxation is discussed further in part 6.

### 3.5 INTEREST-GROUP-POLITICAL OBSTACLES

The biggest practical challenge in making the (democratic) decision to *implement* a land value tax is probably the political controversy and objection due to vested interests of real estate owners in sustaining current "real estate wealth". Implementing such a tax – at least quickly – might cause "adverse wealth effects" to owners of significant amounts of land and real estate. (Cohen & Coughlin 2005, p. 360) These can be reduced by combining the implementation of a land value tax with certain monetary policy reforms or compensating real estate owners for their windfall loss in land value. This would effectively mean the public sector "buying" the land value from private real estate owners, as will be explained in part 7.3.

We should also note that for a person who intends to live in her own apartment in the same region for the rest of her life, a drop in real estate prices is largely irrelevant: The losses in market value are never realized if you don't sell your apartment. And if you sell it in order to change apartments within the region, a general drop in the real estate market doesn't affect your ability to get a similar apartment in exchange for what you received selling the previous one. Actually, one of the only really valid reasons to own one's own apartment – in the absence of tax benefits, subsidies and inevitably escalating land value – is hedging one's living expenses. Buying a house with intent to live in the same area rest of your life is like "swapping" (in financial terms) your rent risk for an interest rate risk. (But in the absence of tax benefits, even for this end it would make more sense to invest in a diversified portfolio of local real estate through an investment fund.) If you have a large mortgage relative to the market value of you apartment (i.e., with low equity) and the drop in the market value of you apartment is sudden and significant, your bank might become concerned for the loss of collateral. Reducing the subsidies of

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important job of supplying efficient locations for all man's productive activities, and the efficient use of available land.

A 100 percent tax on rent would cause the capital value of all land to fall promptly to zero." (Rothbard 1997, p. 297)

homeownership and credit finance would reduce the incentives for taking and granting such low-deposit mortgages.

Another interest-group-political issue – at least in Finland – is “regional politics”. It can rightfully be speculated that many political instances want to maintain the high prices of housing in the Helsinki metropolitan area in order to deter immigration from the rest of the country. For some reason, Finns have a need to keep the whole country inhabited at any cost. Taking such an agenda for granted, let’s note that if the land tax went at least partly into state revenues – and not only into municipality revenues – the lower land taxes in smaller (and especially shrinking) municipalities would serve as a transfer payment to these regions. But otherwise (especially with our current environmental concerns) there are few valid justifications for subsidizing scattered living (a.k.a. sprawl) – and even fewer for deterring people from moving after work to allow structural adaptation between regions.

### 3.6 CLAIMS OF COLLECTIVELY CREATED VALUE

Some (libertarian) critics of LVT argue that land value is created by *owners* of surrounding real estate, and that it would hence be unfair to “punish” property owners collectively for this value creation.

“The Georgist argument that property owners should have to pay for capitalizing on an externality they did not create (land) is refuted by the fact that the externalities are created every day by surrounding property owners and to punish them as a class is illogical.” (Peterson & Michie 2014)

However, the claim that landowners create land value is not valid. Even if some of those people that play a big role in raising land value would own a lot of land, the *landownership* isn’t the way that they raised it!

Firstly, as said, public infrastructure investments and other public services play a big role.

Secondly, private services are not all produced by landowners. Many service businesses that raise the value of residential buildings operate on leased premises. The positive externalities of the services provided are in no proportion to the entrepreneur’s financial position in real estate.

One example is San Francisco. For the most part, San Francisco is made desirable by the Silicon Valley business ecosystem that generates highly innovative and scalable technology and online service companies and attracts lots of talented and hard-working



people as well as wealthy investors. The purchasing power that this cluster brings has further fed the emergence of a broad range of consumer services including restaurants and cafés. The presence of presumably intelligent entrepreneurs and their families also makes the city a highly desirable place for people to raise their children, which further increases the area's competitiveness over businesses<sup>2</sup> The prestigious Stanford University – a degree from which grants access to many high-paying labor markets – is another attractive feature, making people ready to pay for studying in the city.

None of these factors are the makings of landowners or real estate developers.

Of course, executives of successful companies are likely to become homeowners, as they have sufficient equity and income to get onto “the property ladder”. The university and some companies also own large amounts of real estate. But even they haven't generated these positive externalities on land value *with* their *landownership* – or even their real estate development skills. Quite the contrary, land values in San Francisco are partly as high as they are precisely because zoning does not allow very much improvements and innovation in real estate development. (Avent 2014) This makes access to this desirable and productive community a limited resource for which landowners can charge high rents.

The land value is the making of the community of people living and doing business in an area – not the ones who happen to own the real estate. Nevertheless, a large part of the economic benefits of the high productivity and innovativeness of the area has been reaped by local landlords, with no special effort or innovation of their own.

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<sup>2</sup> As Ed Glaeser says on this Freakonomics podcast:

“The problem is that my welfare function depends critically on having people who are smarter than I am around me. And would need to make sure that my kids also had a lot of people who are smarter than they were around them.” (Dubner 2015)

## 4 Components of Location Value

The market value of lots – undeveloped locations – is directly derived from the potential (future) uses available for that location and hence follow the market value of houses and other facilities. (Kanerva et al 1987, p. 34; Peltola & Väänänen 2007, p. 2) Theoretically, the only difference between these should be the construction costs.

The market value of the whole piece of real estate can be derived from the rent that people are ready to pay for using it – just like the market value of any capital asset is the net present value of the cash flows it is expected to generate for the investor. The valuation equation for land is explained in more detail in “6 Effects of LVT and Other Real Estate Taxes on Market Values”.

A major component of location value is proximity to, or, more accurately, the *reachability* of major urban centers. (Peltola & Väänänen 2007, p. 16) This does not only depend on direct geographic distance, but more on available transportation routes and services such as roads and public transport systems. In some simplified valuation models, renters face a tradeoff between transportation costs, including travel time (which is also affected by traffic congestion), and rent costs. Hence, the rent they’re willing to pay increases as the travel costs and times to e.g. work and commercial centers drop. (Alonso 1964)

Additionally, regions and areas can have more local properties that have an *attractive* or a *repulsive* effect. For example rivers, lakes and parks tend to be attractive features for residential properties, (Peltola & Väänänen 2007, p. 19) while the proximity of a major highway, an airport or other sources of noise, smell and pollution often have a repulsive affect. (Kanerva et al 1987, p. 34) Of course, the relative valuation of different locations (like anything in a market) is always very subjective and perceived, and also e.g. the “status” and *reputation* of certain regions is a significant factor.

“Land”, or location, could also be categorized as a “privilege” instead of a natural resource because its value depends more on the collective productivity of the local society (and therefore people’s real income) than any pre-existing features of nature.

As explained under 2.3, unlike buildings, location is extremely price-inelastic in supply. The potential to build in central locations can be increased by e.g. changing zoning to allow higher structures or different uses and although, in some cases, land can be extended into the sea or by digging rails and roads underground. Nevertheless, such decisions and the implementation of such projects seldom follow directly the market prices of real estate. (Such changes in the available amount are therefore not “price

elasticity".) Therefore the market value of land (the location value of real estate) is largely determined by demand: what people and companies are willing and able to pay for living or operating in a region.

## 5 Determining Location Value

The biggest (valid) concerns with and objections to real estate taxes are related to the fairness and reliability of the methods used to determine the value of real estate. Unfair practices and cases of corruption are the main factors making the real estate tax one of the most hated taxes in the U.S.. (Cohen & Coughlin 2005, p. 360)

As land is seldom sold alone from underneath buildings, the value of the land (the location value of the real estate) is usually determined by subtracting the estimated value of improvements from the market price of the whole piece of real estate. In land value taxation or two-rate taxation of real estate, determining the value of improvements fairly and accurately is another challenge.

E.g. Austrian economists Friedrich A. Hayek (1960, pp. 352-353) and Murray N. Rothbard emphasize the impossibility of any assessor to make a fair assessment of market value.

“How will the annual tax on land be levied? In many cases, the same person owns both the site and the man-made improvement, and buys and sells both site and improvement together, in a single package. How, then, will the government be able to separate site value from improvement value? No doubt, the single taxers would hire an army of tax assessors. But assessment is purely an arbitrary act and cannot be anything else. And being under the control of politics, it becomes purely a political act as well. Value can only be determined in exchange on the market. It cannot be determined by outside observers.” (Rothbard 1997, p. 296)

Here (for once) Rothbard has a valid point. Land value taxation has to be based on market information with as little room as possible left for the consideration of any assessor or other human judgment. This is also necessary to minimize corruption and regulatory capture.

### 5.1 DETERMINING THE FULL MARKET VALUE OF REAL ESTATE

#### 5.1.1 Owner-Determined Value with Sale Obligation

In Henry George’s model, the land valuation problem was solved by letting every owner value her own real estate and be required to sell it at that price to any willing buyer. (George 1912) In theory, this solution is almost perfect: Undervaluing one’s real estate

would increase the risk of losing that real estate and therefore such a valuation method would keep all land in the most valuable use available.

In practice, two troubles here are the relatively high *transaction costs* of moving and the fact that people become emotionally attached to their apartments. A wealthy enemy could – out of pure malice or to gain leverage in another negotiation – buy you out of your house (or threaten to do so), even at a loss, as this would impose an even bigger subjective cost on you. I'll call such offers “hostile offers”.

Such fears could require some disliked or powerful people to pay ridiculously high taxes (beyond the actual market value) for their apartments only to avoid losing their family home or having to move all the time. The same applies to office premises and other business and industry facilities: Companies could conduct “hostile takeovers” of their competitors’ premises just to damage the competitors’ operations.

### 5.1.2 Valuation Based on Binding Purchase Offers and Realized Deals

The inverse model seems much more fair in practice: Instead of forcing owners to sell apartments or facilities to any willing buyer, it would be more humane to adjust valuations according to any outstanding *offers* on apartments and oblige the highest bidder to buy if the seller agrees to sell at the offered price.

### 5.1.3 Statistical Methods

However, similarly as with owner-determined value, valuing each individual piece of real estate based on offers made on that piece of real estate only, leaves the possibility of hostile offers: If person A has an emotional attachment to his/her apartment, then person B who has lots of money and/or much to gain in persuading person A in some way could make a high value offer on person A’s apartment, effectively raising person A’s real estate taxes or forcing him/her to sell the apartment to person B, a hostile party.

Using the resulting offers on all similar apartments in the same area, a statistical average could be set to determine a minimum and maximum amount for the actual taxable value of individual apartments – eliminating the effect of “hostile offers” and possible brand value of certain buildings (see section 5.2.5).

The value of a lot is largely dependent on (a) the attractiveness of the location (see part 4) and (b) what kinds of uses its zoning allows. Therefore, any real estate transactions and outstanding offers in an area can be used to readjust the value of all real estate in that area. If there happen to be unbuilt lots in the area, the offers out on these give a good reference point for the value of other land, but even in their absence, algorithms can be

used to determine the prices of hypothetical unbuilt lots of different building rights based on the prices of different kinds of real estate developments in the area.

Of course, this leaves the challenge of determining the value ratio between apartments e.g. facing different directions and on different floors in the same building. Penthouses and seaside apartments tend to be valued much higher than ground floor apartments – and such valuation differences are of course very subjective and possibly volatile.

On the other hand, in a market where homeownership isn't unnecessarily subsidized with any tax benefits compared to living on rent (as it now is in many countries), a majority of real estate would likely be owned by investment companies and funds (rather than the occupants). The competition between these over the most profitable pieces of real estate would likely provide a far more versatile and regularly updated range of offers on all real estate on the market, making market values follow rental prices much more closely. In this situation, it would likely be whole apartment buildings (or fungible shares in them) that are traded, instead of individual apartments, reducing the problem with valuing apartments on different floors and facing different directions.

In the case of apartment units owned by inhabitants or other different parties, splitting the land value tax burden between owners of different apartments would be done according to the rules of the housing company. The housing company has every incentive to keep these rules fair in order to be able to buy willing buyers for the apartment shares.

## 5.1.4 Impartial Expert Valuation

One alternative is to have a dedicated agency determining the value of all real estate.

The biggest challenge here is that such valuations can be disputed, and there are likely to be many complaints and disputes if there is any chance of lowering one's land value taxes by disputing them.

There are also a notable risks of corruption or some kind of favoritism. If the valuation criteria aren't market-based or somehow clearly objective, there is room for significant gain in giving an acquaintance's buildings a higher valuation.

Additionally, there are significant costs to such a completely independent valuation agency – especially if there are double or triple checks to reduce risks of malpractice.

## 5.2 DETERMINING THE VALUE OF IMPROVEMENTS

In addition to being able to determine (a) a fair market value for the whole piece of real estate, determining the land value requires assessing (b) the value of improvements (and other increases in value created by the owner). Land value is the difference between the two.

### 5.2.1 Reported Construction Costs

The value of improvements is also often referred to as “replacement costs” of the buildings. This approach assumes a kind of cost-based valuation. In this case, the value of new buildings would be their construction expenses.

To find out the *current* replacement costs for older buildings, historical construction and renovation expenses need to be adjusted with time according to (1) changes in the construction cost index, which is affected by productivity development and changes in the price of construction work and materials, as well as (2) the deterioration/depreciation of the building.

Now, the easy way to find out the construction costs of buildings would be to use what the construction company has reported to have spent on the building. However, there is a notable incentive trap especially when the construction contractor is also the owner of the real estate or involved in other business relations with the owner. The constructor has every incentive to exaggerate the construction costs involved and include in them as much of its overhead costs (and of the costs of other businesses it might have) as possible to make it seem as if a bigger part of the value of the developed real estate is the result of development - in order to make the piece of real estate cheaper to hold for potential buyers.

Secondly, using construction *expenses* for valuation would encourage inefficient construction. Achieving high labor productivity in a construction project would be penalized as higher land value taxes: The land value would be perceived to be higher, even though, in reality, the construction company has just achieved a more valuable building for lower costs.

The same problems apply to renovation work. There is as significant incentive to exaggerate the costs of renovation work.

## 5.2.2 Insurance Values

Another private source of building valuations would be insurance companies. Home insurers should, in principle, only value and cover for the buildings, as the location value of the real estate isn't destroyed when an individual building burns down or is flooded.

However, nothing prevents insurers from insuring assets for more than their actual replacement cost (as e.g. some car insurers tend to do). If they do so, they also have to charge higher insurance payments to keep their business profitable. If replacement costs were purely determined by insured values, it might be profitable for homeowners and real estate investors to pay higher insurance fees in order to avoid land value taxes: The insurance payments are far lower than an effective location tax rate (in the range of 5-15 %, see section 7.1). Therefore, blindly trusting the figures given by individual home insurers is not a bulletproof solution either.

## 5.2.3 Impartial Expert Valuation

As with the value of the real estate in general (see subsection 5.1.4), one alternative is to have a dedicated agency determining the value of buildings irrespective of the reports of construction companies or insurance decisions. Many companies develop such valuation models. For example the Finnish Haahtela Yhtiöt is developed advanced methods for taking qualitative factors of buildings into account.

The biggest challenge here, too, is that such valuations can be disputed and that there are notable risks of corruption or kinds of favoritism, as well as the costs involved.

## 5.2.4 Statistical Methods

If homeownership weren't subsidized compared to living on rent and we had an efficient real estate market with real estate investors constantly having offers open on most properties, one solution would be to use the relative changes in these prices to determine the effect that a renovation project or greenfield real estate development project had on the value of a piece of real estate. This would not reward inefficiency in construction work and would not be as subject to corruption, as there would be less reliance on individual human judgment.

The market prices (depending on outstanding offers, see subsections 5.1.2 and 5.1.3) before and after the development would be compared and controlled for changes in the market price of similar, undeveloped real estate in the region. The rise in the value of these pieces of real estate would serve to indicate how much of the increase in value of the developed apartment was the result of the rise in location value and how much due to the real investment. Any previously empty lots or lots with buildings planned to be



razed off them (for e.g. redevelopment) could be subjected to an open auction, allowing for “recalibration” of land values in the area.

## 5.2.5 The Challenge with Brand Value

But is there value other than location value that a building can gain without physical construction and renovation? Unfortunately yes: brand value. This is likely the most difficult kind of value to discern in the case of individual pieces of real estate. Accommodation and office buildings can gain a status and reputation, which increase the rents that occupants are willing to pay for them, but the problem is even more salient in developments made for special purposes and where the service provided is strongly dependent on the specific piece of real estate. Say, for example, that you build a spa (or theme park or casino etc.) almost in the middle of nowhere. You might pay next to nothing for the lot and then invest \$10M in building the spa. Others might consider this a risky investment and no one would make any offers on the spa for more than \$9M. Thus the LVT for the real estate would be \$0 (as its land value, market value minus construction costs, is negative). But with a \$1M investment in marketing during a year (with no further construction), the spa might become very popular among wealthy people and start generating high profits.

As the spa business is strongly dependent on the specific piece of real estate, competitors or other investors could practically take over the *business* by simply buying the real estate from you. (Of course, they might have to rehire the personnel, but that could be a less critical added value factor or competitive advantage than the physical spa itself.) Hence, offers on the spa might rise to \$25M. This added value of \$14M is *not* location value created as a “positive externality” by the surrounding community, as the spa is still located “in the middle of nowhere”. It is brand value built by the spa owner. It makes little sense to charge the spa owner an LVT for the \$15M by which the market value of the spa building exceeds the increase in value during construction. The possibility of such penalization would harmfully disincentivize the marketing of any businesses or real estate and hence many kinds of productive real investment.

The above case example (together with the possibility of “hostile offers”) emphasizes the importance of statistical methods and comparisons with surrounding lots in determining how much of any increase in the price of a piece of real estate is actually location value. In the case of the spa, the price of an adjacent lot would not have changed even remotely as much because of the business potential in the spa itself, which would show that the increase is not a matter of location.

Of course, as explained in section 4, the reputation – “brand” – of a whole region might increase, but this *can* be considered location value. Such a status is seldom caused purely by an individual development. When a developer can expect his investments to raise the value of adjacent land (e.g. when Disney constructs Disney World), it is probably worth it for him to buy up a larger area of land before making the investment decision and then, after his investment decision, sell off at a higher price the bits he does not intend to develop himself. A 10 % LVT would still leave almost half of any land value (and increase thereof) to the owner, but make it unprofitable to keep it out of productive use for a longer time.

To sum up, land value should not be determined purely based on the market price of the individual piece of real estate, but as a weighted average of (or using another algorithm taking in) the highest offers on similarly zoned pieces of real estate in the same region – making considerations for special attraction features (e.g. a river, a beach or exceptionally good views). This would maintain the incentive of any individual developer and investor to maximize the market value of their own real estate, regardless of the means.

But these are only the best options this book comes up with. Land valuation (and the details of LVT in general) is surely an area in economics where lots of (pun intended) creative solutions and innovation is necessary. Competing governance forms – e.g. charter cities or mostly autonomous states within federations – could allow experimenting on different alternatives and letting people choose the ones they consider most fair.

As Friedrich Hayek notes, the biggest challenge with land value taxation is the difficulty “to distinguish clearly between the value of ‘the permanent and indestructible powers of the soil,’ on the one hand, and, on the other, the value due to the two different kinds of improvements – that due to communal efforts and that due to the efforts of the individual owner”. (Hayek 1960, pp. 352-353) However, it is not necessary to distinguish between value resulting from public investments and value resulting from general economic development (or the “powers of the soil”), as long as public investments are approximately known before the land is sold to any private developers. The biggest challenge is in determining the value created by the real estate owners’ own development efforts.

In any case, changes in both municipal investment plans and zoning can cause both windfall profits and losses to real estate owners – and they can do even more so in the current situation with no significant land value taxes. This is why zoning and public investment plans need to be predictable and there should be a system for compensating and charging for land value impacts of changes made to the plans.

# 6 Effects of LVT and Other Real Estate Taxes on Market Values

## 6.1 LAND VALUE TAXATION

Would e.g. a 20 % annual land value tax (LVT) make it impossible for land ownership to be profitable? No, because land values adjust according to the tax. An LVT can theoretically be more than 100 % annually of market value, as will be explained below.

In general, an asset expected to produce an annual cash flow of  $P$  to infinity – a *perpetuity* – can be valued with the formula:

$$V = \frac{P}{r}$$

where  $r$  is the profit requirement (discounting interest rate) of the invested capital.<sup>3</sup>

Here we can see, why land value taxation is essential for a working economy. Land (location) doesn't decay like other real assets and it cannot be produced more of so that the increased supply could reduce the revenues it generates below its production costs (which it doesn't have). Therefore, with negative market interest rates (causing discounting interest rates to drop close to zero), the value of untaxed land is theoretically infinite! No wonder low interest rates are blamed for real estate bubbles. Actually, it just escalates the bubble that is already there.

An asset that is taxed annually according to its market value has to produce the tax rate ( $t$ ) in addition to its profit requirement to the owner ( $r$ ) in order to be profitable. Hence:

$$V = \frac{P}{r + t}$$

If we expect the demand for land – i.e. the price people are willing to pay for the use of location – to grow annually at a steady rate (with e.g. rising real income), then the value of land would be

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<sup>3</sup> You can understand this in two ways. Firstly,  $r$  is practically the profit the asset needs to make annually for holding it to remain profitable, and hence  $Vr = P$ . Alternatively, calculating and adding up the net present values of each year's cash flow gives you the series (sum of an infinite number of terms)  $P_n/(1+r)^n$ , which is  $P_0/r$ .

$$V = \frac{P_1}{r + t - dP}$$

where  $dP$  is the expected annual growth rate in the yield of the asset and  $P_1$  is the current yield of the location.<sup>4</sup>

So, assuming fairly steady demand for land (the real rents people are willing to pay for accommodation and companies for their facilities) in the future, if you tax land 10 % of land value in a situation where the discounting rate for real estate investments is around 5 %, the market value of land would drop to a third. Effectively, the state is reclaiming two-thirds of the ownership – more precisely “right to the income” (See section 6.3, Honoré 1987) – of all land. As John Stuart Mill put it in 1848:

“The whole of [the land-tax], therefore, is not taxation, but a rent-charge, and is as if the state had retained, not a portion of the rent, but a portion of the land. It is no more a burthen on the landlord, than the share of one joint tenant is a burthen on the other.” (Mill 1848, Book 5, Ch. 2, Sec. 6)

But this of course assumes that both  $P$  and  $r$  remain constant. The demand curve for land should not shift only because such a land tax is implemented, as it should not change what people are willing and able to pay for a central location – or living in general.<sup>5</sup> However, if land taxation reduces the need for other taxes, it is possible that the increased purchasing power would make people ready to pay more for the location of their accommodation, increasing  $P$ .

On the other hand, landowners also currently expect land values to continue rising – not just to yield rents – and e.g. in the Helsinki metropolitan area, land prices are currently held on a rising path mainly by the construction cartel restricting supply. Therefore, when land taxes are first implemented, more lots are likely to become available for construction, increasing the supply of apartments and reducing speculative investment demand of real estate. This would, firstly, burst the bubble (“diamond bubble”) maintained by the housing deficit and, secondly, would also reduce the expectations of real estate prices rising in the future, which means that rents have to cover for a bigger part of the return requirement ( $r$ ) set for the investment. If we consider  $P$  to mean rents only, it raises  $r$ . It is therefore possible that implementing such a tax would initially cause

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<sup>4</sup> This is a direct application of the formula for the present value of a steadily growing perpetuity:  $PV = D_1 / (r - g)$  (FF-1)

<sup>5</sup> “Nor, if a tax be levied on that rent or value, this in no wise adds to the willingness of anyone to pay more for the land than before; nor does it in any way add to the ability of the owner to demand more.” (George 1887)

real estate prices to come down much more than the previously presented equation predicts.

Essentially the LVT rate determines how many years' cash flow (including the profits derived from a possible sale) the market price of land will be. With an LVT rate of 100 %, the value will be a little (depending on the discount interest rate) less than one year's profits, with 50 % a little less than two years' profits, with 25 % a little less than four years' profits and with 200 % a little less than half a years' profits.

On the other hand, we must remember that the value of apartments and buildings are not all land value, but also include the value of the buildings, their replacement costs, for which there is no additional tax. If, without LVT, the price of an apartment is half construction cost and half location value, then a 10 % land value tax, eating away 50-66 % of the location value (with a 5-10 % discount rate), would "only" cause real estate values to drop around 25-33 %, assuming no change in supply.

Because land taxation significantly affects the market prices of real estate, unpredictable *changes* in land taxation are effectively massive transfers of *wealth* – not merely income transfers. It is therefore important to implement land taxation gradually, predictably and credibly, so that the effects on land value occur more as halting the constant rise in real estate value than as a sudden crash. This will be discussed further in section 7.3.

In this perspective, it can be considered a very ingenious political maneuver to make the majority of the population incumbent landowners by implementing subsidies that make homeownership more profitable compared to living on rent – and that make high-leverage mortgages more accessible.

"Another problem on the political front was that home ownership was so widespread in America that most families and businesses wanted the land value of their property for themselves." (Hudson 2008, p. 11)

E.g. in Finland there are multiple direct and indirect subsidies that make homeownership very lucrative. When most voters have something to lose in implementing land taxation, such suggestions are not going to be suggested by any major parties, no matter how well one would manage to explain the perverse situation in the construction and real estate markets: how the Finnish "real estate wealth" rests on an artificial apartment deficit and public accommodation support and practically forms a massive income transfer system from all rent payers and taxpayers to owners of real estate.

To explain why it is a very damaging public policy objective to maintain or maximize the *market value* of any existing type of assets, we could consider almost any other asset on the market. What if, in the mid 90s, the government had become concerned for the

market value of the investments in IT (information technology) that people and companies had made – “the Finnish computer wealth” – and had wanted to prevent the market value of all the computers equipped with Pentium and 486 processors from dropping? It would’ve implemented measures to prevent technological progress and restrict supply to maintain computer deficits that ensure that few people can afford new computers and that most of them have to buy second hand ones instead. We would now be stuck with those same CRT screens and 60 MHz processors. Allowing and facilitating investments into the development of the *real quality* of goods – e.g. as upgrades and better substitutes – and more efficient production processes requires letting the *market value* of older, obsolete assets fall.

The political challenge is similar to that with implementing carbon taxes: Companies – and thereby investment and pension funds – have significant sums invested in already found and accessed oil reserves and the decision to tax fossil fuels out of use would annihilate a lot of the value of those investments, which are currently in their balance sheets and capitalized in their stock prices. But as long as such sufficiently brutal carbon taxation is postponed, new and increasing investments into searching for new fossil fuel reserves and developing new technologies to access them will be made. Similarly, as long as land is not taxed, rents and land values will keep rising – the diamond bubble blowing up – due to both the growth of cities and speculative hoarding resulting in inefficient land use – constantly increasing the too-big-to-fail dilemma in the real estate market and raising the political threshold to start taxing land. And the solution to both cases is also similar: a gradual but credibly decisive and predictable implementation plan or raising land value taxes simultaneously with implementing other changes that will likely raise real estate prices (as will be discussed further in section 7.3).

So what would be an optimal, final long-term rate of land taxation?

The main purpose of land taxation was to ensure that holding land without using it for the most productive use available remains unprofitable and thereby prevent speculative hoarding and real estate bubbles. A minimum requirement for this is that the value of land according to the equation

$$V = \frac{P_1}{r + t - dP}$$

does not turn infinite. If it did, then also any terminal value after any time of holding is infinite, offsetting any finite costs of holding the land unused until then. Therefore we have to make sure that in all market conditions

$$t > dP - r$$

The long run demand curve for land in central locations (and hence the profits that can be made on land,  $P$ ) can be expected to rise as general labor productivity and thereby living standards rise. If we assume a constant portion of income that people want to spend on the location of their accommodation, then the demand curve would rise at the same rate with the general real income level. However, if people have little additional material needs (the income elasticity of the demand for location is relatively high), the demand for location might rise even faster. Hypothetically, if we'd need the possibility of real interest rates to go down to at least to -6 % and assuming fairly low risk premiums on real estate (when the market is not speculative) of 3 %, the discounting interest rate could get as low as -3 %. If we add an expected 2 % annual productivity increase (and assume an equal increase in the amount of money that consumers and companies are willing to pay for good locations) to that, we get 5 % as an absolute minimum annual land tax. The "Real Estate 4 Ransom", documentary by Prosper Australia arrives at suggesting a 6 % LVT although it does not present the calculations by which this figure arises. (Emmanuel & Fitzgerald 2012)

For a large construction company, it might be profitable to make a small loss on holding its lot portfolio in order to be able to control market prices and block competition from capturing market share. (Salmela 2012) But as the losses get bigger with higher LVT rates, it becomes a game-theoretically bad strategy to hold bigger portfolios than competition does. Therefore, maintaining an apartment deficit would require an actual cartel that agrees not to sell lots to new entrant construction companies and where the costs of holding excess lots are shared. It would no longer be a profitable strategy for an individual company to hang on to lots just to guarantee future market share. Especially if municipal zoning is slow-paced and lagging behind demand (meaning that small portfolios of unbuilt lots are enough to control prices), a tax higher than 10 % might be necessary.

Also,  $t + r - dP$  getting even close to 0 causes speculative volatility in land prices. So, the higher the land tax rate, the less speculative in nature and less sensitive to interest rate changes the real estate market will be (in the steady state, after LVT has been rolled out).

## 6.2 RENTAL VALUE TAXATION

Let's point out the difference between (1) land value taxation according to the market value of land, as explained above, and (2) *rental value taxation*. For example Singapore and Hong Kong currently tax real estate according to annual rental value: how much it can yield rent in a year. The effect of such a rental value tax ( $t_r$ ) on land value is very different:

$$V = \frac{P_1(1 - t_r)}{r + dP}$$

With positive discount rates, the effect of rental value taxation on land values is more linear. Market values should drop directly in proportion to the tax rate (a 20 % tax should drop land values by 20 %). Like land value taxation, rental value taxation can reduce land speculation and increase land use efficiency by making it less profitable to hold land unused. But we can see how a rental value tax below 100 % cannot turn the rent yield of a land investment negative for the owner, as a land value tax could.  $V$  would still approach infinity when  $r$  approaches 0. Therefore, with low interest rates, real estate would be just as bubbly and volatile with land rent taxation than without it – only with smaller absolute values.

Also, determining the rental value for owner-occupied buildings is not that straightforward. Singapore uses a capitalization rate ( $r$ ) of 5 % as a rule, but interest rates can change and, even with constant interest rates, the profit requirements are always subjective for every investor and can vary for buildings in different areas and for types of real estate (e.g. according to how volatile the demand in an area or for the type of real estate in question is perceived to be). In an efficient real estate market (with equal tax treatment for rental living and homeownership), market information for the price of the whole real estate can be more readily available, regardless of occupant. (See section 7.2)

## 6.3 PUBLICLY OWNED, RENTED LOTS

Another suggested solution to the monopoly nature of land would be simply to remove private land ownership altogether: The government or municipality would own all land and lease to homeowners, real estate developers or investors. E.g. Silvio Gesell proposed full state ownership of all land ("*freiland*", Gesell 1916, Part 2)

The difference between this and higher land taxation is notable, but not dramatic – in theory. Looking back at Tony Honoré's classification of rights included in ownership:

- 1) the right to possess
- 2) the right to use
- 3) the right to manage
- 4) the right to the income of the thing
- 5) the right to the capital
- 6) the right to security
- 7) the right of transmissability



- 8) the right of absence of term
- 9) the duty to prevent harm
- 10) liability to execution and
- 11) the incident of residuary. (Honoré 1987)

In a switch to the lease model from very highly taxed ownership, private users of land would lose their rights to “transmissibility”, of “absences of term” and of “residuary”. The “rights to use”, “to manage” and “to the income of the thing” would not change much.

In practice, however, leasing land without the buildings is very problematic. If buildings could be costlessly teleported from one place to another (or if they could “lift off” and land again in other places like some Terran buildings can in the real time strategy game Starcraft), we could have a very efficient land-lease-based real estate market and an urban structure that constantly evolves to suit the demands of its citizens and businesses. But, in reality, moving real estate developments is seldom feasible.

If a private investment company owns the land on which you’ve built a house (or holds the lease from the government for it), what limits how much the investment company can charge rent from you? As you cannot move your house anywhere else and the construction costs are sunk costs, the (monopolist) lessor would be in a position to rob you of all of the capital of your house (the income it can generate), simply by raising the rent on the land to what anyone would be willing to pay to live in the house. This, together with the ability of anyone to buy (or lease from the government) land from “underneath” any building would kill the incentives for all real estate development (for anyone not owning the land as well).

Also Silvio Gesell emphasized the importance of the leaseholder having assurance that his lease won’t be cancelled, so that he dares invest in improvements on the land. As one solution to this issue and the incentive for leaseholders to “impoverish the soil”<sup>6</sup> he suggested making the lease lifelong.

“After the land has been nationalised it will be divided according to requirements of agriculture, housing and industry, and leased by public auction, for terms of 1, 5, 10 years, or for life, to the highest bidders.” ...

“But in any case exhaustion of the soil by the tenants can easily be

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<sup>6</sup> “Leasehold tenure has been objected to on the ground that the tenants will be more inclined to impoverish the soil than the present owners who are personally interested in keeping the soil in good condition. The leaseholder, it is said, squeezes everything out of the soil and then moves on.” (Gesell 1916, Part 2, Ch. 3)

prevented. The tenant can be given a lease of his farm for life.” (Gesell 1916, Part 2, Ch. 3)

How could the lease on the land possibly follow a fair market price with such fixed leases? Also in reality, governments or municipalities own lots and lease them to homeowners, real estate developers or condominiums. E.g. in Hong Kong, the Chinese government officially owns all land, but lease periods are relatively long and have fixed rents,(CLIC 2013) and hence the costs to the leaseholders don't follow the market value of the location. The owners of the real estate still receive the gains from increases in location value. The leaseholders or apartment share owners in condominiums (if the condominium has a direct lease from the government) end up being the *de facto* landowners. And setting such public leases of land leave lots of room for corruption and bias.

Gesell's solution – which is clearly more designed for agriculture than for growing urban areas – seems to also require price regulations and other state intervention in the market:

“The leaseholders will be given certain securities for the stability of the economic factors upon which they base their offer, so that they cannot be crushed by their contract. This object could be achieved by the guarantee of minimum prices for agricultural products, the currency being adapted to these prices; or by reduction of the rent in case of a general rise of wages. In short, as the purpose of the reform is not to harass the farmer, but, on the contrary, to create and maintain a flourishing state of agriculture and a healthy farming class, everything possible will be done to bring the yield of the soil and farm-rent into permanent agreement.” (Gesell 1916, Part 2, Ch. 3)

The location and improvements together determine the market value of any piece of real estate and you cannot really lease or buy a *location* without its fixed improvements.

With no right to the income or capital of the thing and no incident of residuary, there would be little incentive to improve land – especially in ways that don't count as “construction”. Such actions might include removing large rocks and boulders to flatten it for construction, planting trees for future forestry gains in a more rural region, or finding better uses for the location or the natural resources on it (although Bryan Caplan's (2012) example that a high land value tax would decrease incentives to search for oil might not be a very appealing argument in many environmentalists' ears).

Although the value of location is largely determined by what can be found around it, also the owner can affect location value, especially if he owns a larger area. Residuary and

transmissability – i.e. that the real estate owner can keep a small part of the value of the location – together with some income from the location value give the owner every incentive to keep the location in as good a condition as possible and to ensure that his developments are beneficial for the value of the whole region. E.g. a large real estate developer might actually be inclined to build infrastructure and recreational areas on his own expense in order to increase the value of his other developments – not having to leave these completely on the responsibility of the municipality. This incentive for owners to maximize location value while keeping underusage unprofitable (together with the obvious room for corruption in public leases) is what makes a land value tax that appropriates a part of the location value of real estate (but not all of it) look like a much better solution than the public lease model.

# 7 Conclusions and Recommendations

## 7.1 OPTIMAL LVT RATE

In theory, taxation that fully appropriates land value would be the economically optimal solution, since the owner of the piece of real estate cannot impact this land value directly themselves. Land value can be considered an externality.

However, we have concluded that in practice, objectively determining land value without a real-time market data seems to be an impossibility. For market prices to be formed, there needs to be some value left for private owners to value. Hence, a higher land value tax rate reduces the reliability of market-based valuation methods.

Based on this assessment, the initial conclusion is that an optimal land value tax rate would appropriate 50-75 % of land rents to the state, leaving 25-50 % for the private owners. This reduces the volatility of real estate, and would provide a significant source of public income while still providing fairly reliable market data for the purposes of determining land value fairly. Assuming a 5 % long-term discount rate on real estate investments on average, this would mean a 5 % to 15 % tax rate on the market value of land (location). Practice will show whether this proportion of land rent left to the market to value is sufficient for reliable determination for taxable value.

In section 6.1, I speculated on future discount rates for real estate as low as -3 %, and concluded a minimum 5 % land value tax to be needed to prevent land values from turning highly volatile even at such discount rates.

## 7.2 BEST PRACTICES FOR VALUATION

Expert valuations are inevitably subject for bias and corruption, and when tens of thousands of euros in annual rental income as well as millions in real estate value are in question, the temptation and incentives for influencing such experts' judgment becomes dangerously high. Hence also the monitoring and active regulation needed to weed out such corruption easily becomes very expensive.

Hence, this suggests determining taxable land value according to a clear formula which takes in mostly real market data (actual transactions and binding offers).

In order to weed out outliers and "non-land properties" of individual buildings, such as brand value and the risk of hostile bids, this thesis recommends setting a cap for taxable value based on the statistical averages of land values in surrounding areas, e.g. limiting

deviations from the local norm to a maximum of e.g. 10 % and specific premiums attributed to individual buildings due to unique views, derived from the exact position and angle of a lot and how the construction permits of nearby lots limit such visibility.

A majority of land value is based on accessibility (see section 4), which should change fairly continuously with e.g. distance from public transport hubs.

The biggest challenge is that even within one apartment building, equally renovated apartments of similar size can have quite different market values due to e.g. different views, elevator access, or street noise. Some apartments might have different rules regarding how they can be renovated – and use rights are effectively part of location value.

The suggested solution to avoid this issue is that public tax authorities determine taxable values for whole real estate companies (fin. “asunto-osakeyhtiö/kiinteistöosakeyhtiö”) only. It is then up to each real estate company to determine in their own rules how these tax responsibilities are split between the owners of individual apartment units or office space. This would allow room for private innovation in more fair ways to determine the differences in land value for apartments on different floors and with different views. Of course, recommended templates for such rule additions regarding tax burden allocation can be provided by the tax authorities, and some regulation has to exist that prevents e.g. minority shareholders in apartment companies from being robbed of their real estate value by the majority owners changing the tax allocation rules in the company against the will of the minority. The full challenges involved with such a system are hard to assess without practical experience of how real estate companies would do this in practice.

## 7.3 MINIMALLY DISTORTIONARY ROLL-OUT METHODS

### 7.3.1 Political and Economic Risks Involved in Real Estate Market Swings

Valuations (net present value) of any financially valuable asset depend on the expected futures cash flow or other benefits that one can expect that asset to yield in the long run. Taxing the ownership of an asset (e.g. land value taxation) or its cash flows (e.g. land rent taxation) reduces the income it yields for the owner, and hence lowers its present value for the owner. In the case of e.g. a private enterprise, this does not need to be a long-term effect: If all competing companies are treated equally by the tax raise, this simply raises

the profit requirements of all companies in the market, and, as price competition slackens, the pre-tax profits can rise to compensate for the tax.

However, this does not apply to monopoly resources, such as land. When there is no real competition and when the price elasticity of supply is non-existent, the price (in this case the land rent) is not determined by production costs and profit requirements, but almost purely by demand: what people and companies on the market are willing to pay for it. (Hulkko 2013) A tax directly cuts into the revenues yielded by the land.

Hence, implementing a land value tax or raising it unpredictably can be expected to cause land values to fall sharply to correct for the change in expected revenue. This means unfair windfall losses to those who have just recently bought e.g. an apartment before the announcement of (or speculation on) such a tax raise.

Moreover, in an economy where a very large bulk of overall debt is composed of mortgages taken by households, with real estate as the main collateral, sudden broad scale drops in real estate values poses a huge systemic risk on the financial solvency of the banking sector. In many countries, this level of mortgage lending is partly the result of public implicit and explicit subsidies on homeownership compared to living on rent.

One could speculate that these subsidies are practically a symptom treatment for the income-difference-increasing effects of private land ownership. Instead of reducing the rents granted by real estate ownership, public policies have tried to give a bigger part of the population the chance to “join the landowning class”. With higher land value taxation, there should be less political pressure to support homeownership (which might also have other benefits to the economy such as increasing mobility). However, it might be necessary to cut down on homeownership subsidies already “upfront”, before the implementation of land value taxation, in order to start deleveraging the banking sector from high mortgage levels. This would be beneficial in any case: Even without a correction in valuations caused by a miscalculated land value tax rollout, real estate markets without land value taxation are volatile (increasingly so with low interest rates), and financial crises are almost inevitable.

### 7.3.2 Compensating for the Effects of LVT by Removing Other Taxes

A capital income tax that is paid on rental income but not imposed on the accommodation benefits owner-occupiers receive by living in their own house is effectively also such a subsidy on homeownership. To remove this subsidy, some have suggested taxing owner-occupiers similarly for the rent they pay themselves. However, it would be economically even more efficient to remove to replace such taxation directly

with land value taxation, instead of implementing a separate “correction tax”. On the other hand, removing capital income taxes from rents alone would likely raise real estate values. Combining the implementation of a land value tax with removing such other (less efficient) taxes on real estate and rents, can offset each others’ effects. Assuming a discount rate of 10 % for real estate, removing a 20 % capital income tax off rents would correspond to a 2 % tax on the valuation of the real estate. Assuming that, on average, approximately half of real estate value is land value, this would allow raising land value tax rate by 4 percentage points, and, in theory, real estate investors would, on average, not change their valuation of apartment investments. (Homeowners would of course not be willing to pay as much for their homes, which would effectively encourage a reduction in homeownership and a deleveraging of the mortgage burden in banking.)

### 7.3.3 Possible Balancing Changes in Monetary Policy

As discussed, interest rates are another significant factor influencing the value of perpetuities like land rents. *Ceteris paribus*, lower interest rates directly raise land valuations, as explained in section 6. In a perfect world, we would have an automatic interest rate mechanism, balancing aggregate supply and demand in an economy, and the risk-free market interest rate would finally be determined by (a) the market’s overall propensity to save and (b) the availability of profitable real investment opportunities. However, most Western economies’ monetary policies do not allow for this kind of balance. Due to standard ~2 % inflation targets, real interest rates effectively have a lower bound at -2 %. Even if the balance interest rate were lower, central banks’ mandates don’t allow pursuing such low real interest rates.

Changing monetary policy to allow yet lower interest rates when they are needed (or possible without causing hyperinflation), would immediately change all investors’ expectations of long-term average interest rates significantly. *Ceteris paribus*, this would likely cause a massive real estate bubble, which is one of the main arguments against “slack” or “loose” monetary policy, and why “macroprudential policy” tends to call for avoiding low interest rates even when the economy is clearly in a downturn and clear output gaps and deflation pressures exist. Correcting this major restriction of monetary policy simultaneously with implementing land value taxation would be a major opportunity: These are two problems that could solve each other. As explained under section 6, the land value tax rate and the risk-free interest rate both affect the valuation of location in exactly the same way (both raise the sum in the denominator of the valuation equation). Hence, a monetary policy change that is expected to lower long-term expected

average real interest rates by 2%-points would allow raising the LVT rate by 2 % points, and the effects of these changes should compensate for each other.

There are also other factors that currently keep interest rates and hence discount rates higher than they would need to be. One such factor are the guarantees on bank deposits, which are currently provided in many countries by the public sector for free or at nominal costs significantly below their market value. Charging a proper price on this guarantee, would of course raise the premiums on bank loans (relative to deposit interest rates) accordingly, discouraging credit finance overall (further discouraging excess leverage in the economy). However, with no lower bound on interest rates, we could expect real deposit rates to be lower with a price on deposit guarantees than without such a prices.

It is of course a challenging endeavor to determining exactly how much markets expect long-term interest rates to fall as a result of policy changes like the ones described above. Announcing exact raises in LVT together with such changes is at best enlightened guesswork, and a swing in real estate prices in one direction or the other is likely unavoidable. Some kind of feedback loop based on market prices, here too, could be implemented minimize unintended consequences. However, completely eliminating “political risks” of markets is impossible, especially with real estate prices that are affected by everything from monetary policy, to zoning, to public infrastructure investment, to the performance of local schools, to rental and construction regulations.

One alternative is to make the LVT rate *complementary* to the central bank policy interest rate, so that the sum of the two remains a constant. It takes some research to determine whether this alternative would yield a less or more stable real estate market than a fixed-rate LVT would.

### 7.3.4 Gradual Implementation

Apart from such opportunities to offset the valuation effects of land value taxation by implementing such other beneficial changes simultaneously, avoiding big swings in the market prices of real estate can be done by raising land value taxation gradually, at rates predicted to halt the rise in land values, but not cause a big, sudden correction.

As all expected future cash flows affect valuation, even a promise to raise land value taxes in 10 years, should be reflected in real estate prices immediately, as long as it is credible. However, as long as discount rates remain positive, the change is smaller than a similar immediate raise. The challenge is making such long-term politics credibly and predictably with political power balances shifting every election year (every 4 years in many countries). Though this can maybe be done faster during overall economic upturns,



the maxim of avoiding real estate market swings does set a strong limitation to implementing notable levels of real estate taxation (see section 7.1).

### 7.3.5 Compensating for Losses (the State “Buying” the Land Value)

If we conclude that we have to make such drastic changes that inevitably cause swings in real estate markets, then one feasible alternative for reducing net windfall losses is to compensate real estate owners for the losses they incur with a lump sum payment.

As for alternative two, this would effectively mean that the state “buys” a part of the land value of real estate from private owners. It would be sensible to finance such a “force appropriation” of land value with further public debt, as it is effectively a very low-risk real estate investment. Yes, the public “debt burden rises”, but on the other hand the government receives a long-term income source. If this income source were capitalized into the state’s balance sheet, state would not become significantly less solvent – possibly even more so.

Just like the most efficient and objective way to determine taxable value is to use market data, similarly it seems sensible to use market data determine the compensation received by each real estate owner. Just like attempting to tax all land value eliminates the market data, a full compensation of the resulting drop in market value would make the assessment of that market value drop difficult. As a worst case scenario, all real estate owners might be incentivized to sell their real estate underpriced in order to get the maximal compensation. Hence, (a) the compensation would have to be partial, say 60-75 % of the fall in the value of real estate, and (b) the compensations would have to be statistically balanced between nearby lots (just like the taxable values of individual pieces of real estate) in order to remove the incentive to make a deal with a acquaintance or family member to sell off a piece of real estate at a price below market value to maximize compensations.

## 7.4 FURTHER RESEARCH NEEDED

Given the potential socio-economic benefits of replacing transaction taxes (such as income taxes, value added taxes, and corporate taxes) to taxing monopoly resources like land value, we can conclude that the impacts of different types of land value taxation and the possible implementation alternatives are an unfortunately neglected field of research. One reason could be the lack of land tax implementations. However, this is a “chicken and egg problem”, and I would argue that developing better implementation alternatives and getting more exact data on the impacts of such taxes and their roll-out would be

required in order to facilitate serious societal discussion of more widespread adoption of heavier land value taxation systems. A lot of room for innovation remains. Hopefully this thesis can serve as a starting point, granting researchers and policy makers to a broader perspectives of the solution alternatives, as well as inspire further iteration of models and quantitative research and analysis.

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