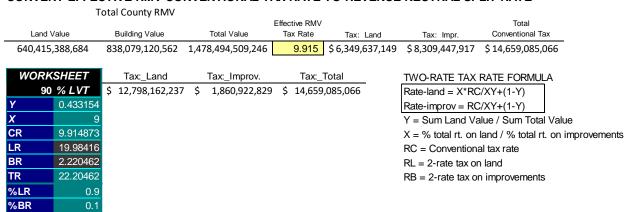# Three Variations of a Land Value Tax

Common Ground OR-WA was reorganized in 2012 as a 501(c) 4 corporation, registering as a chapter of Common Ground USA. Since then we have been studying the incentive effects of land value taxation (LVT) by using parcel level data sets to examine tax shifts when changing from the conventional, single-rate ad valorum property tax system to an LVT system. During the process of developing methodologies for this research, we have employed three models that are useful for model simulations. These are explained as follows:

SPLIT RATE LVT

Pennsylvania is the first US state to adopt a local option land value tax. Pittsburgh instituted a split-rate LVT in 1913 which has become the standard method in the US. In place of the conventional equal rate tax, the total tax rate for a single jurisdiction is split into two rates: the higher rate on land assessments and a lower rate on improvements. It should be noted that nowhere has the single tax idea of Henry George, replacing all taxes with a tax solely on land rent, been adopted. A commonly used East Coast method is to reduce the tax on improvements by a given percentage, then backfill the deficit by raising the land rate proportionately.

An alternative method was developed in Seattle in 1993 by the Washington State Georgists Association. Here the total tax rate itself is split according to a chosen percentage. For example, a 75 percent LVT would split the rate such that 75 percent of the total rate applies to RMV land assessments, and 25 percent applies to improvements. Land value tax advocates generally recommend a phase-in period during which a low percentage LVT (e.g. 55 percent) would remain in place for a few years after which the ratio would gradually increase to perhaps 90 percent of the total rate on land and 10 percent on structures. An example of this split-rate variation is illustrated below.

CONVERT EFFECTIVE RMV CONVENTIONAL TAX RATE TO REVENUE NEUTRAL SPLIT RATE

Total County RMV

Land Value	Building Value	Total Value	Effective RMV Tax Rate	Tax: Land	Tax: Impr.	Total Conventional Tax
640,415,388,684	838,079,120,562	1,478,494,509,246	9.915	$ 6,349,637,149	$ 8,309,447,917	$ 14,659,085,066

WORKSHEET		Tax:_Land	Tax:_Improv.	Tax:_Total
90 % LVT		$ 12,798,162,237	$ 1,860,922,829	$ 14,659,085,066
Y	0.433154			
X	9			
CR	9.914873			
LR	19.98416			
BR	2.220462			
TR	22.20462			
%LR	0.9			
%BR	0.1			

TWO-RATE TAX RATE FORMULA

Rate-land = X*RC/XY+(1-Y)

Rate-improv = RC/XY+(1-Y)

Y = Sum Land Value / Sum Total Value

X = % total rt. on land / % total rt. on improvements

RC = Conventional tax rate

RL = 2-rate tax on land

RB = 2-rate tax on improvements

The worksheet contains calculations using an algebraic formula that converts a county-wide single rate to two rates, resulting in a total tax that is revenue neutral. Using this method it is necessary to obtain summary figures that include all taxable properties, separating land and building assessments. The simulation model uses real market value (RMV) assessments, as is necessary for land value tax applications. The 90 percent LVT (X=9) is split such that the LVT mill rate on land (LR = $19.98) is higher than the single rate RMV tax rate of $9.915 for the county, and the LVT rate on

buildings (BR = $2.22) is lower. In Oregon, the single tax rate under M-50 would be higher because the total maximum assessed value (MAV) lags behind real values. In this scenario, the higher MAV rate (closer to 20) applied to both land and improvements would yield the same $14.66 billion revenue.

In practice, the initial calculation establishes a basis for revenue neutrality at the first year of a phase-in period. The chosen land rate would probably be close to %LR=.55 and the LR/BR differential would be smaller. In the following years there would be no assessment limits because the local option LVT exempts jurisdictions from M-50. Rather, it is likely that the legislature would adopt tax limits consisting of revenue caps. In this case annual total conventional taxes (revenues) would gradually increase over time.

AXI

The Assessment Exemption on Improvements (AXI) is an alternative approach developed by the Center for the Study of Economics based in Philadelphia, Penn. It is designed as a land-based tax system resulting in more tax savings for smaller properties. This method employs a universal abatement on all building assessments across a jurisdiction; that is, the dollar exemption amount for buildings is the same for every parcel. Thus a $50,000 assessment exemption is much more meaningful to the owner of a modest house than to an office building or shopping center.

Like the split-rate LVT, the AXI would be phased in over several years by exempting an increasing percentage of the city-wide median building value (e.g. 50 percent – 100 percent) from every property. In the initial calculations the exemption on building values results in reduced total taxable values and decreasing revenues. Then, the shortfall is recovered by offsetting the reduced revenue with gradually increasing AXI tax rates to remain revenue neutral in each successive year.

This shift reduces the taxable building value of most properties, simultaneously raising the tax revenue obtained from land values. While achieving similar objective as the LVT, that is to provide an incentive to invest in and maintain property improvements, the aim of AXI is to also reduce the tax burden on lower valued properties, mainly residential properties.

Because most low-valued properties fall below the median, those buildings would see complete abatement. Essentially, the AXI is akin to the more familiar homestead exemption which excludes a specified amount of the value of a property from taxation. This amount generally represents a higher proportion of the assessment on lower-valued properties than higher-valued properties. Thus, while a homestead exemption provides tax relief to all homeowners, it provides the greatest relief to residents living in modest homes. Likewise, by gradually increasing the AXI abatement threshold from half the median value to full median value we can, in a revenue neutral way, shift the tax from low-income areas to non-residential and higher-income residential areas.

In the illustration below, the total building value exemption is the unit value exemption multiplied by the number of parcels. In this case, 65,768 is half the median building value of $131,536 in the introductory year in this jurisdiction. Total taxable value includes land and taxable building value. The AXI tax rate is calculated by dividing the conventional tax levy by total taxable value. Being revenue neutral, the total AXI tax matches the tax revenue obtained from the conventional tax rate.

ASSESSMENT EXEMPTION ON IMPROVEMENTS (AXI)
GRADUAL INCREASE IN BUILDING VALUE EXEMPTION RATIO OVER A SIX-YEAR PERIOD

Year	No. Parcels	RMV Land Value	Building Value	Total Value	Median BV	BV Exempt. Ratio	Unit Bldg. Value Exemption	Conventional Tax Rate	Conventional Tax on Total Value
Yr 1	189,594	17,742,070,686	24,938,477,147	42,680,547,833	131,536	0.50	65,768	14.088	$ 601,284,731
Yr 2	189,594	19,139,010,306	25,936,016,233	45,075,026,539	136,797	0.60	82,078	14.140	$ 637,361,814
Yr 3	189,594	20,637,739,821	26,973,456,882	47,611,196,703	142,269	0.70	99,589	14.190	$ 675,603,523
Yr 4	189,594	22,245,398,006	28,052,395,157	50,297,793,164	147,960	0.80	118,368	14.238	$ 716,139,735
Yr 5	189,594	23,969,614,092	29,174,490,964	53,144,105,056	153,879	0.90	138,491	14.284	$ 759,108,119
Yr 6	189,594	25,818,541,069	30,341,470,602	56,160,011,672	160,034	1.00	160,034	14.328	$ 804,654,606

TAXABLE VALUE - LAND & BUILDINGS					AXI TAX			
Land Value	Total Bldg. Value Exemption	Taxable Bldg. Value (BV less exemption)	Total Taxable Value		AXI Tax Rate *	Land Tax	Bldg. Tax	Total Tax
17,742,070,686	12,469,238,574	12,469,238,574	30,211,309,260		19.903	$ 353,113,998	$ 248,170,733	$ 601,284,731
19,139,010,306	15,561,609,740	10,374,406,493	29,513,416,799		21.596	$ 413,319,624	$ 224,042,190	$ 637,361,814
20,637,739,821	18,881,419,818	8,092,037,065	28,729,776,886		23.516	$ 485,312,844	$ 190,290,679	$ 675,603,523
22,245,398,006	22,441,916,126	5,610,479,031	27,855,877,038		25.709	$ 571,901,341	$ 144,238,394	$ 716,139,735
23,969,614,092	26,257,041,867	2,917,449,096	26,887,063,188		28.233	$ 676,739,164	$ 82,368,955	$ 759,108,119
25,818,541,069	30,341,470,602	-	25,818,541,069		31.166	$ 804,654,606	$ -	$ 804,654,606

By increasing the abatement threshold during a six-year phase-in period from half the median building value to full median value we can shift the tax from low-income areas to non-residential and higher-income residential areas and to vacant lots, large lots, and large buildings. Lower value residences would receive the largest tax break in year six: a home structure valued at $160,000 would be entirely exempt. Thus, a universal abatement will provide the city's modest homes and small businesses with property tax relief. The AXI model is similar in its incentive effects to the split-rate LVT, although somewhat less robust.

Our preliminary simulation models show that compared to the LVT variation, AXI does indeed shift tax burden onto larger lots and onto non-single family residences; AXI is also somewhat likely to shift burden onto larger buildings. Thus, a universal abatement will provide the city's modest homes and small businesses with property tax relief. The principles of equitability through both benefits received and ability-to-pay come into play.

DETROIT UNIVERSAL EXEMPTION LVT

After years of decline and abandonment, a new version of land value taxation was proposed in 2023 to replace Detroit's current property tax. In essence, the new system will shift the tax burden off buildings onto unused land, with the expectation that taxing land more will spur development.

A 2022 study by the Lincoln Institute of Land Policy proposed the land-based tax as a solution. A consultancy arrangement with the Massachusetts Institute of Technology is an outgrowth of effort by the Detroit Economic Growth Corporation. The new system is a combined universal exemption / land value tax (UE/LVT).

Michigan state's interpretation of *Ad valorem* uniformity necessitates the exemption of all property, land and improvements. Therefore, the universal exemption is the removal of a portion of the tax levy on all real property. This lost revenue is then replaced, dollar for dollar, with a land value tax. Thus, the combined UE/LVT is revenue neutral by construction. The Detroit LVT differs from Pennsylvania's split rate in that it is a separate, new tax.

The illustration below applies this methodology to a hypothetical county parcel data set.

DETROIT UNIVERSAL EXEMPTION - LVT REPLACEMENT TAX
EXEMPTION EXPRESSED AS A MILL RATE

RMV TAXABLE						
Land Taxable Value	Building Taxable Value	Total Taxable Value	Exemption Rate	Univ. Tax Exempt. Land	Univ. Tax Exempt. Building	Total Universal Tax Exemption
66,572,947,240	118,536,799,620	185,109,746,860	6.00	399,437,683	711,220,798	1,110,658,481

CONVENTIONAL TAX				LVT REPLACEMENT TAX			
Effective RMV Tax Rate	Conventional Tax Land	Conventional Tax Building	Total Conventional Tax	Balance of Land Tax	Balance of Building Tax	Rev. Neutral LVT Rate	Replacement Land Tax
10.325	$ 687,333,402	$1,223,834,983	$1,911,168,386	287,895,719	512,614,186	16.6833	1,110,658,481

TAX SHIFT	
Difference in Land Tax	Difference in Bldg. Tax
423,325,079	(711,220,798)

The Detroit LVT replacement tax uses a rate exemption rather than an assessment exemption as does the AXI. Our trial modeling confirms that this method produces the exact desired effects as the split-rate LVT. Had we borrowed from the AXI model, using median value instead of the rate exemption, our model output would have been inconsistent with tax shift effects using the LVT split rate model.

Varying the selected exemption rate (in this case $6 per $1000 RMV) produces variations in tax shift; the higher the rate the greater the tax shift onto land. The replacement LVT tax rate is calculated by dividing the total universal exemption ($1.1 billion) by the taxable land value ($66.6 billion), giving us a $16.68 mill rate. The result is revenue neutral.

The conventional equal rate tax method is computed separately, preceding the calculation of the balance of land and building taxes. Tax shift is first measured by the difference in the tax on land between the conventional and UE/LVT methods: $1.1 billion replacement land tax less the conventional tax on the land assessment ($687 million), returning $423 million. Compared to the conventional tax, this shift amounts to a 61.6 percent increase in the tax on land and nearly and equivalent decrease in tax on building value. The 6 dollar per $1000 exemption rate produces an outcome equivalent to a split-rate 71 percent LVT.

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We request that the use of and dissemination of any of these methods be acknowledged by naming its origin with reference to CG OR-WA.

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