Agricultural Classification

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What is classification?

- A classified property tax system allows various classes of property to be taxed differently.
- That can be done in several ways:
  - Different assessment ratios
  - Different valuation methods or assessment practices
  - Different statutory tax rates
- The ultimate result is different effective tax rates (ETRs) across classes of property.

Bedford: First Parish Church First Parish Church, Bedford, Massachusetts.

Bedford, MA Example

Bedford MA example

- Just north of Boston in Bedford there are striking, but common, examples of UVA effects, as featured in Anderson and England (2014).
- One large residential tract located near the Everett Turnpike with local street frontage is assessed at $7,865 per acre.
- Another sizable parcel close to the turnpike with frontage on a cul-de-sac is assessed at $10,047 per acre.
- In the same neighborhood, however, is an even larger tract of vacant land that the assessor values at $127 per acre.
- There are nearly 200 undeveloped parcels covering more than 13 percent of the town's land area that are assessed far below market value–at an average of $155 per acre.
- How can this be? Answer: Use-value assessment.

Use-Value Assessment (UVA)

- UVA is the practice of assessing property in its current economic use rather than its *highest and best use* reflected in its market value.
- Alternative potential uses of the land are ignored.
- UVA is typically used for agricultural property, especially in areas where urban pressures create high market values for land currently used in agriculture.
- Market values are higher than agricultural use values due to development option value and other factors.
- However, UVA is often used in pure agricultural areas as well.

Why classify?

- *Political rationale*: Provide preferential treatment for favored property owners–legislation crafted in response to rent-seeking behavior of industry lobbyists. Benefits concentrated among relatively few while costs are diffused among many. (public choice theory)
- *Economic rationale*: Efficiency gains in taxation are possible by recognizing different elasticities of property supply and demand. Tax rates should inversely with elasticities of demand or supply. (optimal tax theory)

Motivations for agricultural classification

- Save the family farm
- Preserve open space in urban areas
- Slow urbanization
- Improve the environment

Questions about UVA agricultural classification

- What is true agricultural use? e.g. hobby farms
- How is use value estimated?
- Is UVA effective in achieving its goals?

Figure: Recent listing of hobby farm property for sale in Georgia

Effective tax rates

- Ultimately, classification involves different effective tax rates applied to classes of property.
- Effective tax rates may differ from statutory rates depending on the assessment ratio.
- The effective tax rate t^e is the product of the assessment ratio a and the statutory rate t^s:
  - $t^e = at^s$
  - where the assessment ratio a is the ratio of assessed value (AV) to market value (MV): $a = AV/MV$.
- So, the lower the assessment ratio a the lower the effective tax rate t^e.

Example

- In Nebraska agricultural property is assessed at 75 percent of market value ($a = 0.75$) whereas other classes of property (residential and commercial classes) are assessed at 100 percent of market value ($a = 1.0$).
- So, for a given statutory tax rate, the effective tax rate on agriculture is 25 percent lower.
- If the statutory rate is 1.5 percent, for example, the effective rate for agricultural property is 1.125 percent while it is 1.5 percent for other properties.

Assessment practices

- States apply equalization mechanisms to assure uniformity in assessments across jurisdictions.
- For example, in Nebraska assessments for agricultural land should be 75 percent of market value, although a tolerance range of 6 percent is allowed (i.e. 69 to 75 percent) before an equalization factor is applied.
- The typical measure of uniformity in assessments used by property tax administrators is the coefficient of dispersion (COD).
- Note that there may also be an interaction with the state's school aid formula which includes property value per pupil in determining state-aided school district funding.

Coefficient of Dispersion COD

- According to the IAAO, the most generally useful measure of variability or uniformity is the COD which measures the average percentage deviation of ratios from the median ratio.
- COD is computed as follows:
  - subtract the median from each ratio
  - take the absolute value of the difference
  - sum the absolute differences
  - divide by the number of ratios to obtain the average absolute deviation
  - divide by the median
  - multiply by 100
- COD has the desirable feature that its interpretation does not depend on the assumption that the ratios in the study are normally distributed (which they are most certainly not).

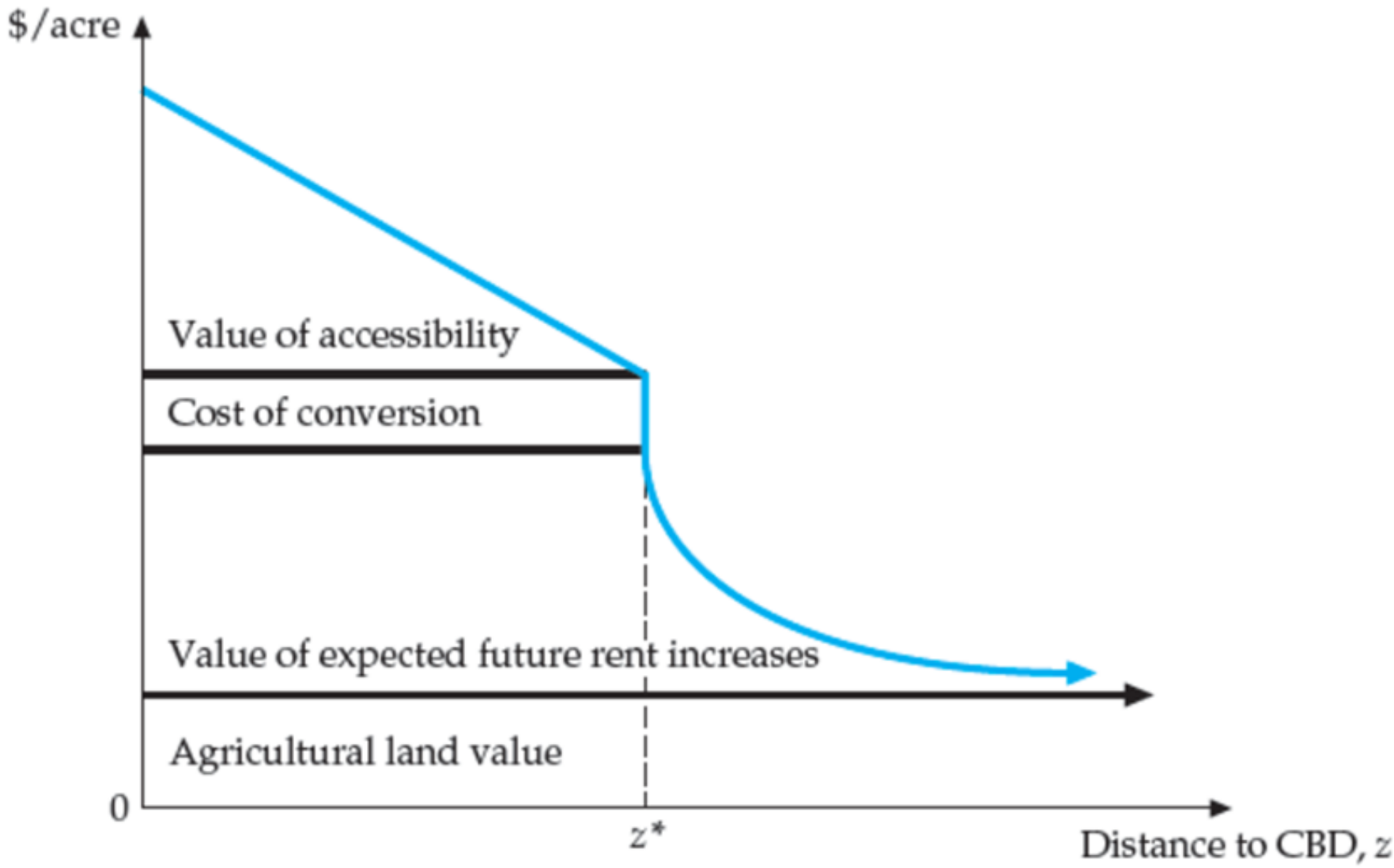
Use-value assessment

- The primary way that states treat agricultural property differently from other classes is via use-value assessment (UVA). All 50 states use UVA to some extent–some statewide, others in selected areas, e.g. in counties with greenbelts.
- With UVA agricultural property is assessed in its current agricultural use, ignoring all other potential uses of the property.
- In Nebraska this is known as *special value* which is the uninfluenced value of the land for agricultural and horticultural purposes.

Fundamentals of land value

- The following diagram illustrates the components of land value in an urban area.
  - Agricultural land value
  - Value of expected future rent increases
  - Cost of conversion to developed use
  - Value of accessibility
- Beyond the urban fringe (distance z^* from the CBD) the difference between market value and UVA diminishes rapidly, becoming insignificant.
- Note that *economic rent* is the return to a factor fixed in supply–land in this case.

FIGURE 17.1 Fundamentals of Land Price



Use-value assessment

- UVA implementation applies the income capitalization approach to valuation.
- Assumptions are made about the net revenue (income) generated by agricultural land and a capitalization rate is chosen.
- Using a simple perpetuity formula for illustration purposes, the value V of a parcel is the ratio of its annual net revenue R divided by the discount rate r plus the effective property tax rate t^e:
- $V = R/(r + t^e)$
- Note that increases in either the capitalization rate r or the effective tax rate t^e reduce the value of land.
  - Increased taxes are capitalized negatively in land value.
  - Tax reductions confer windfall wealth gains to land owners.

Use-value assessment

- Estimated property value using this approach is subject to a number of assumptions, a veritable assessment *black box*.
- Assumptions:
  - gross revenue generated from raising crops/cattle–requires assumptions on sales prices of outputs and quantities produced
  - costs associated with raising crops/cattle–requires assumptions on uses of inputs and their costs
  - choice of a capitalization rate to reflect the opportunity cost of capital

Virginia case study

- Virginia uses a prototypical method of assessing agricultural property starting with a composite or typical farm for each jurisdiction.
- Second, net return budgets are computed for each crop grown on the composite farm. Annual per-acre returns are derived for each crop using a seven-year Olympic moving average (throw out highest and lowest observations).
- The third step is to calculate a single estimate of net return for the crops grown on the county's composite farm. A weighted average of crop net returns and composite farm acreages is computed. the result is the Estimated Net Return.
- Finally, a capitalization rate is then used to compute use-value (with and without risk).
    - Bruce and Groover (2007) indicate that the rate with risk should only be used where the soil has poor drainage that is not remedied by tilling or drainage ditches or when land is in a floodplain.

TABLE 3
Virginia Land Classification

Land classification	Description	Virginia land capability class index
Class I	Soils have few limitations that restrict use	1.50
Class II	Soils have some limitations that reduce the choice of plants or require moderate conservation practices	1.35
Class III	Soils have severe limitations that reduce the choice of plants or require special conservation practices, or both	1.00
Class IV	Soils have very severe limitations that restrict the choice of plants, require very careful management, or both	0.80
Class V	Soils are subject to little or no erosion but have other limitations impractical to remove that limit their use largely to pasture, range, woodland, or wildlife food and cover	0.60
Class VI	Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover	0.50
Class VII	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to grazing, woodland, or wildlife	0.30
Class VIII	Soils and landforms have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, or water supply or to aesthetic purposes	0.10

Source: Bruce and Groover (2007).

TABLE 4
Virginia Land Productivity and Soil Index Factor Computation

Land class	Crop acreage	Productivity index	Weighted acreage
I	418	1.50	627
II	21,273	1.35	28,719
III	10,617	1.00	10,617
IV	8,196	0.80	6,557
Total	40,504		46,519

Source: From Bruce and Groover (2007) Appendix C, p. 24, with corrections provided by authors.

TABLE 5
Virginia Example of Capitalization Rate Computation

Capitalization rate component	Value	Source
Interest rate component	0.0761	10-year average of long-term interest rates charged by the various Agricultural Credit Associations serving Virginia
Property tax component	0.0043	10-year average of the effective true tax rates reported by the Virginia Department of Taxation
Rate without risk	0.0805	Sum of above two components
Risk component	0.0040	0.05 times rate without risk
Rate with risk	0.0845	Sum of above two components

Source: Bruce and Groover (2007), Appendix C, page 24.

Games states play with capitalization rates

- The market interest rate r includes the risk-free rate r^* plus *one or more* of the following (not necessarily all of these factors):
  - inflation premium (IP)
  - default risk premium (DRP)
  - liquidity premium (LP)
  - maturity risk premium (MRP)
- $r = r^* + IP + DRP + LP + MRP$
- The rate chosen for UVA estimation should ultimately reflect the opportunity cost of capital, i.e. the next best return that could be earned with the resource.
- States often use inflated capitalization rates to reduce assessed valuations and thereby lower effective tax rates.
- See the following table of capitalization rates used by states. Note Louisiana, Texas, and Wisconsin examples.

TABLE 1
Capitalization Rates used by Selected States in Computing Agricultural Use Value

State	Capitalization rate computation
Arizona	FLB rate + 1.5%
Illinois	Five-year average FLB rate
Indiana	Computed from Chicago FRB real estate loan and operating loan interest rates
Iowa	7%
Kansas	Five-year average FLB rate + add-on of at least 0.75% and not more than 2.75% (determined by Director of Property Valuation) + county average property tax rate Legislature specifies that above computation must be at least 11%, but not more than 12% (in 2002)
Louisiana	Max{12%, calculated rate}, where calculated rate = risk free rate + 2.33% risk component + 0.16% nonliquidity component
Maryland	Computation in 1999: 9–2% for inflation + 5% for capital market imperfection + 1% effective property tax rate = 13%
Massachusetts	Five-year average FLB rate
Mississippi	Min{10%, calculated rate}
New Mexico	Cap rate is established for five-year period of use, based on FLB and PCA rates
North Dakota	12-year trimmed average of St. Paul FLB rate, computed by omitting highest and lowest rates, averaging remaining 10 years rates
Ohio	60% of Average Farm Credit Services 15-year interest rate + 40% of previous five-year average interest rate on equity
Oklahoma	65% of five-year average FLB rate + 17.5% of five-year average second mortgage rate + 17.5% of five-year average CD rate + county effective tax rate
Oregon	Five-year average FLB rate + effective property tax rate
South Carolina	FLB rate + effective local tax rate + risk adjustment of 15% + 0.3% for nonliquidity
Texas	Max{10%, FLB rate + 2.5%}
Utah	Five-year average FLB rate
Virginia	10-year average of Agricultural Credit Association interest rate + 10-year average of effective true property tax rate + risk adjustment (optional)
West Virginia	Riskless rate + risk adjustment + nonliquidity adjustment + management rate + statewide effective property tax rate
Wisconsin	Max{11%, five-year average of one-year ARM agricultural loan rates + municipal tax rate}
Wyoming	Five-year average Omaha FLB rate

Source: Kansas Department of Revenue (2000), supplemented with the author's additions for Indiana, Kansas, Ohio, Virginia, and Wisconsin.

Bootleggers and Baptists

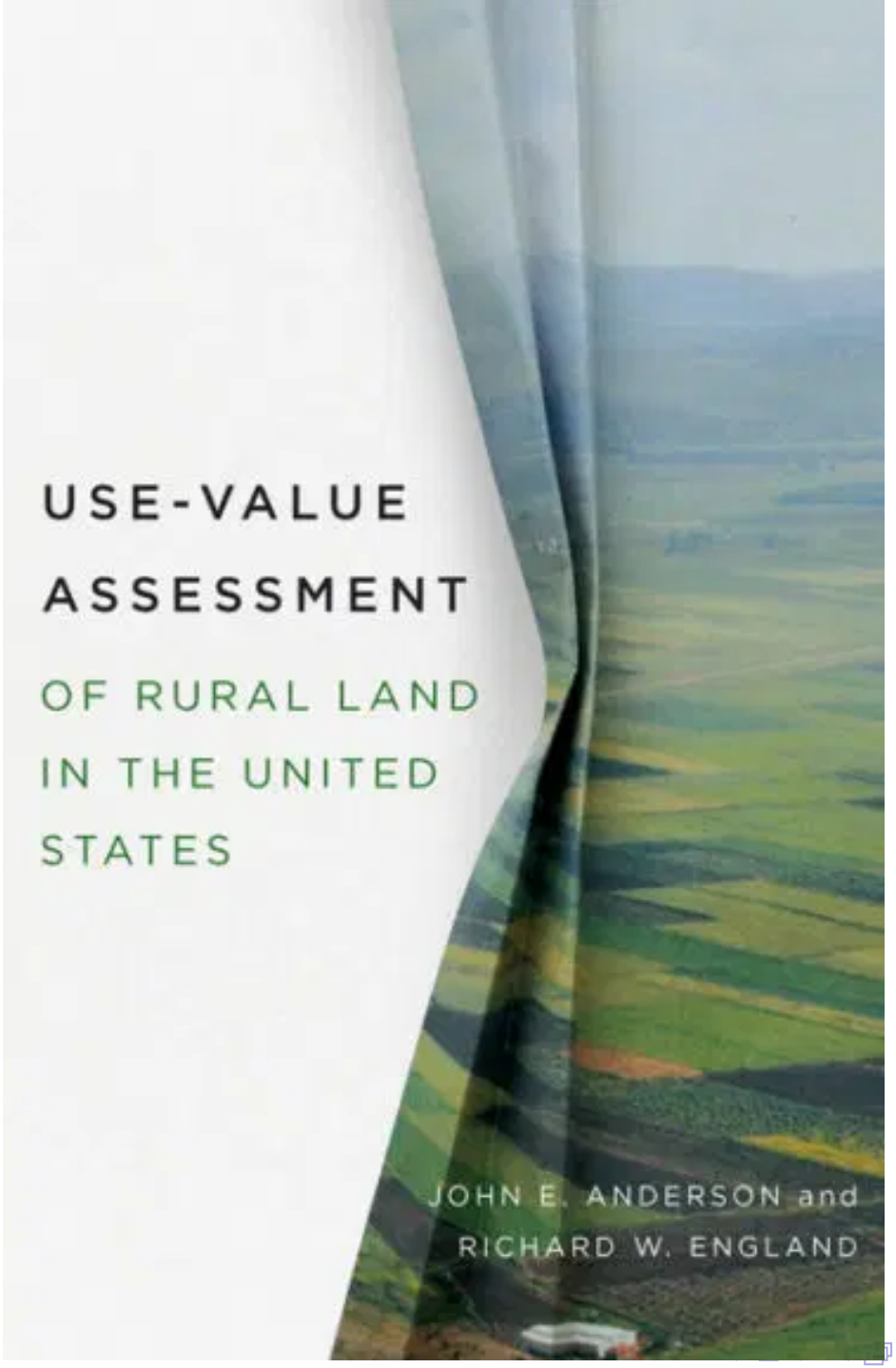
- One might ask why all states have adopted some form of UVA giving agricultural preference in taxation.
- A public choice theory suggests that an unlikely coalition of special interests have successfully lobbied for and succeeded in obtaining this preferential treatment.
- Using the example of bootleggers and Baptists who were successful in convincing legislators to adopt temperance laws, it may be that UVA regulations are the result of alliances between interest groups with very different motivations.
- In this case, environmental groups interested in curbing development and sprawl may make a moral case for UVA, whereas the agriculture lobby works to influence the political process to gain a tax preference for agricultural property owners.

Use-value assessment resources

- For a comprehensive overview of the ways that states implement UVA see the LILP book by Anderson and England (2014) *Use-Value Assessment of Rural Lands in the United States*.
- For a Cliff's Notes version of that work, with an emphasis on recommended policy changes in UVA application, see the LILP policy focus report by Anderson and England (2015), *Use-Value Assessment of Rural Lands: Time for Reform?*
- For a review of the estimation and policy issues involved with implementing UVA see: Anderson, John E. (2012). "Agricultural Use-Value Property Tax Assessment: Estimation and Policy Issues." *Public Budgeting and Finance*, Volume 32, Number 4 (December), pp. 71-94.

Use-value assessment resources

- For a review of how UVA policy diffused across all 50 states see: Anderson, John E., Seth H. Giertz, and Shafiun N. Shimul 2022. "Reducing Property Taxes for Agriculture: Diffusion of Use-Value Assessment Policy across the United States." *Land Use Policy*, 120: 1-12.
- For a more general view of how taxes and fees may alter land use see: Anderson, John E. 2005. "Taxes and Fees as Forms of Land Use Regulation." *Journal of Real Estate Finance and Economics*, Volume 31, Number 4 (October), pp. 413-427.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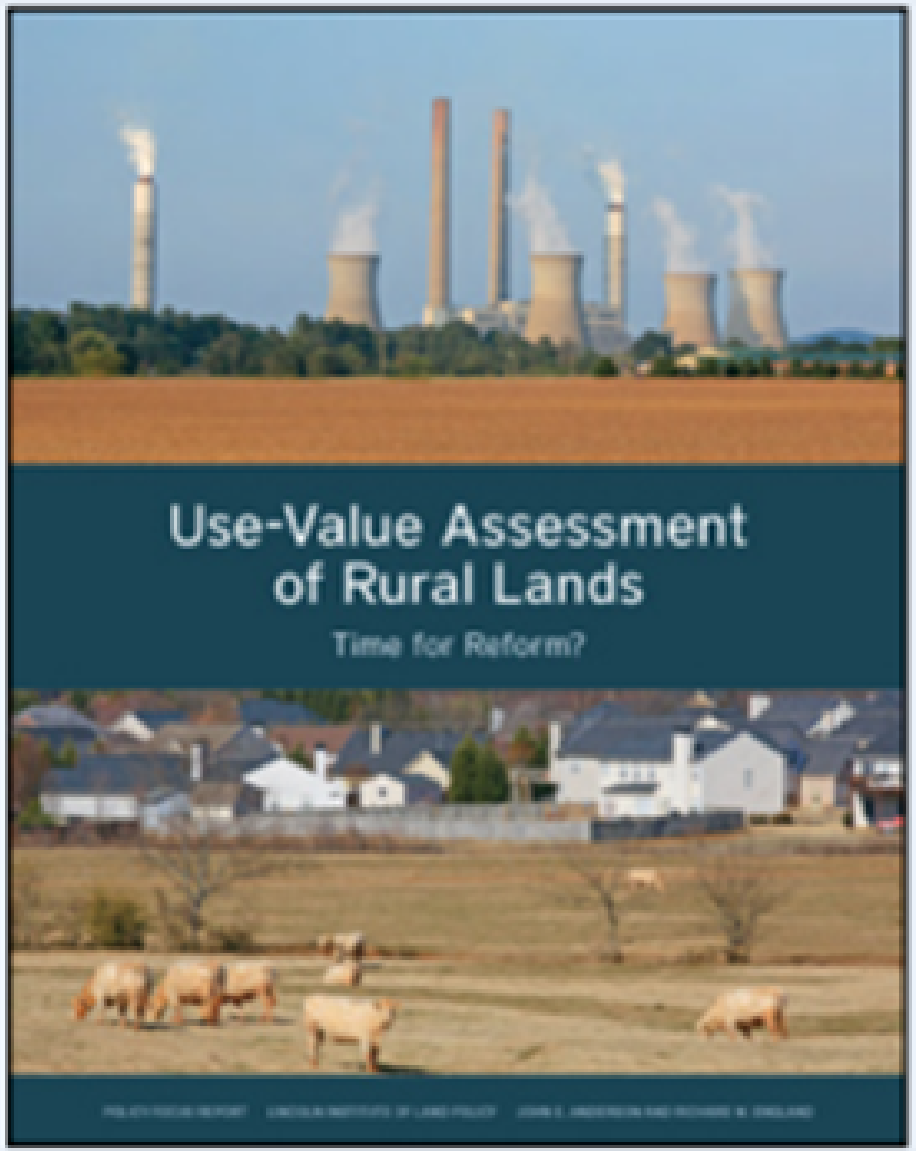

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