**Assessing the Distributive Impact
of a Revenue-Neutral Shift from a Uniform Property
Tax to a Two-Rate Property Tax
with a Uniform Credit**

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Abstract

A number of economists have argued that a property tax with a lower rate applied to improvement values than land values is superior to a property tax with a uniform tax rate that yields the same total revenue. This paper explores the statutory incidence of shifting to two-rate property taxation from single-rate property taxation. The authors recommend a tax credit provision to mitigate the regressive tendencies of this type of tax reform.

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Introduction

The United States has a long history of depending upon property taxation to help pay
for local government services, and that fiscal tradition continues to this day. During
2000-01, for example, property taxes comprised 72.9 percent of the tax revenues
collected by local governments across the nation (U.S. Census Bureau). At the same
time, the property tax fosters widespread voter discontent, in large part because of its
perceived inequities (Youngman 2002). This discontent, in turn, has fueled a number of
efforts at the state level to reform the local property tax (Duncombe and Yinger 2001).

This paper argues that there is a strong case for adopting a particular version of property
tax reform: a two-rate property tax with a uniform credit on each tax bill. Many authors
have already pointed to various economic benefits from cutting the tax rate on building
values and simultaneously raising the tax rate on land values to achieve revenue
neutrality. Brueckner (2001) makes the theoretical case that taxing land values more
heavily might promote denser patterns of land use and thereby help to prevent socially
excessive rates of land development. Tax simulations by England (2003) indicate that
taxing land values instead of property values could stimulate commercial and industrial
activity, thereby promoting income and employment growth. Plassmann and Tideman
(2000) report empirical evidence that two-rate property taxation has actually encouraged
construction in various Pennsylvania cities. Oates and Schwab (1997) suggest that
nonresidential construction in Pittsburgh received a boost from split-rate taxation during
the 1980s.[1] For other analyses of two-rate taxation, see the anthology edited by Netzer
(1998).

If the theoretical and empirical case for adopting two-rate property taxation is so strong,
then one needs to explain why so few jurisdictions in the United States have actually
embraced this type of property tax reform. Until recently, the only examples have been
in Pennsylvania. Pittsburgh and Scranton implemented split-rate taxation in 1913, and
Harrisburg followed decades later in 1975. During the closing decades of the 20th
century, another dozen Pennsylvania cities followed the lead of their more populous
neighbors (Hartzok 1997: Table 1). In 2002, the Commonwealth of Virginia enacted a
bill permitting Fairfax City to adopt a two-rate property tax.

A general reason for the limited adoption of two-rate property taxation is that tax reforms
always redistribute income and net worth among taxpayers. Those who stand to lose

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[1] There is at least one dissenting voice, however. Lee (2003) has argued that a shift towards
taxing land values more heavily could result in overproduction of local public goods if absentee
landlords own a substantial share of the real estate within a taxing jurisdiction.

from tax reform can be counted upon to oppose adoption even if implementation of the reform proposals would improve efficiency of resource allocation and increase society's real income (Felder and Schleiniger 2002, Kochanowski 1991).

Where property tax reform is at stake, however, there is a more specific obstacle to changing the tax system: many homeowners who face higher tax bills after property tax reform will not move because of potential search costs, moving expenses, realtor fees, real estate transfer taxes and loss of neighborhood ties (Englund 2003: 938). Hence, these homeowners would experience a substantial drop in disposable income and consumption as a result of tax reform and thus are likely to oppose its adoption in the first place. On the other hand, those homeowners who are willing to move in order to avoid paying a higher property tax bill would face tax capitalization effects in the housing market. This prospect could also provoke opposition to tax reform.

Of course, legislators have already grappled with alleged inequities of the property tax by enacting circuit breakers for low-income renters and homeowners, homestead exemptions, and elderly homeowner exemptions (Plummer 2003, Duncombe and Yinger 2001). In the remainder of this paper, we will argue that the distributive implications of two-rate property taxation have to be taken into account if it is to gain widespread political support. More specifically, we propose that a revenue-neutral shift to two-rate taxation of real estate needs to be accompanied by introduction of a tax credit provision in order to mitigate the regressive tendencies of this form of tax reform.

Calculating Post-Reform Tax Changes

Consider the following set of variables:

n	the number of taxable parcels in a jurisdiction
L_i	the assessed land value of parcel i
B_i	the assessed building value of parcel i
τ	the original uniform property tax rate
τ_L	the new tax rate on land values
τ_B	the new tax rate on building values, and
C	the standard credit available to every taxable parcel.

Let us make the following set of tax policy assumptions:

1. Property tax reform shifts the statutory tax burden towards land values:

$$\tau_L > \tau > \tau_B \geq 0, \ C \geq 0.$$

2. After implementation of tax reform, the individual tax payment cannot be negative. This nonnegativity condition can be represented by the following function, where 1 indicates a tax payment and 0 indicates no tax payment following property tax reform:

$$I_i = \begin{cases} 1 & if \quad \tau_L L_i + \tau_B B_i - C > 0 \\ 0 & if \quad \tau_L L_i + \tau_B B_i - C \leq 0 \end{cases}.$$

3. Property tax reform results in aggregate revenue neutrality, at least until property reassessments take place:

$$\sum_{i=1}^{n} \tau(L_i + B_i) = \sum_{i=1}^{n} (\tau_L L_i + \tau_B B_i - C) \cdot I_i$$

Given this trio of policy assumptions, what can one say about the change in tax payment that a property owner would face after adoption of property tax reform? As demonstrated in the appendix to this article, we can expect a specific set of impacts that depend upon a parcel's value ratio (B_i/L_i) and its land value:

- If the value ratio of a parcel is greater than the aggregate value ratio for all taxpaying parcels, then a parcel's tax change will decline in magnitude (and perhaps become negative in sign) as the building tax rate (τ_B) falls.
- If a property's land value is greater than the average land value for all taxpaying parcels, then a larger (maximum) tax credit will increase the tax change for this parcel.
- For a particular combination of tax rates and credit level, a higher land value tends to increase the owner's tax change and a higher building value tends to lower the owner's tax change.

Accuracy of Property Assessments

Before proceeding to a discussion of tax reform simulations for a small city in New England, we must first address a thorny methodological issue – the degree of accuracy of existing land and building assessments. Some jurisdictions report only the total assessed values of properties, but others purport to have separate values for buildings and sites. If one intends to tax structures and land at different rates, then one obviously needs to have separate building and site values for each parcel.

Several authors have claimed that the land and building values reported by local tax assessors are nearly worthless. Mills (1998, p. 44), for example, says that in some communities "separate assessments are made of site and structures, but they are made by arbitrary rules, such as that sites are [valued at] 20 percent of total property value." Netzer (1998, p. 119), in a similar vein, comments that "because tax bills…are [currently] based on the total value of the parcel, the assessor has no reason to waste time on a

careful separation of land and structure values. This is reinforced by the fact that state laws do not encourage appeals of land and structure values separately."

To the extent that these claims are true, then implementation of two tax rates and a credit would have to be preceded by revaluation of taxable properties according to their "highest and best uses." Of course, recent sales data for raw land could be used for this purpose. However, for developed land, a less direct approach would be required. Mills (1998, pp. 45-6) has proposed that hedonic models could be used to statistically estimate site and structure values for developed properties. Gloudemans (2000) has performed such an analysis using data for Boise, Edmonton and suburban Denver. His preliminary results are promising and could be extended to other urban areas. Anas (1998, p. 58) suggests that a municipal land authority could acquire vacant buildings, demolish the structures and sell the sites in order to generate urban land price data for assessment purposes.

But are existing assessments of land and building values totally arbitrary? Perhaps not. After analyzing data for all the towns and cities in New Hampshire, we have concluded that the land value assessments reported by tax assessors do reflect market conditions to some degree and hence could be used to approximate the market value of land parcels in each locality.

Recent research in urban economics suggests that metropolitan regions in various nations consist of a traditional urban center and various satellite subcenters. Land prices decline in an exponential fashion with distance from the urban center, but market values for land also vary positively with access to transportation networks and proximity to regional subcenters (Anas, Arnott and Small 1998). In a study of vacant land sales in metropolitan Chicago, Colwell and Munneke (2003) found that land prices declined exponentially with distance from downtown Chicago. They also found evidence of local maxima in suburban land prices associated with O'Hare airport, the intersection of two interstate highways and satellite employment clusters.

If one thinks of New Hampshire as the northern extent of the Boston regional economy, then one would expect market prices of land within the Granite State to decline with physical distance from Boston. This variable, combined with access to the regional road network, is captured in our econometric model by driving time, in minutes, to Boston (TBOS).

One would also expect employment clusters within New Hampshire itself to elevate the market price of land. Thus, cities within the state (CITY) are hypothesized to have higher market land values. So are waterfront and ski resort towns (H20 and SKI, respectively), both of which attract considerable numbers of tourists annually. Finally, because New Hampshire does not have a retail sales tax and surrounding states do, several border localities enjoy substantial retail business. These towns and cities (SHOP) are also expected to have higher land values.

In an effort to see whether assessed land values in New Hampshire reflect market prices of land or not, we have regressed the average <u>assessed value</u> per taxable acre (AVACRE) in each locality on this set of variables that should be associated with <u>land prices</u> in the real estate market. (Table 1 summarizes descriptive statistics for these variables.) As reported in Table 2, all of the determinants of land prices correlate significantly with land assessments and have the anticipated coefficient signs. Thus, it appears that land value assessments in New Hampshire do capture useful information about land prices.

Table 1
Description of Data Set
(N=235)

Variable	Minimum	Median	Mean	Maximum
AVACRE (dollars)	813	8,785	18,682	496,321
CITY	0	0	0.0553	1
H20	0	0	0.0851	1
SHOP	0	0	0.0383	1
SKI	0	0	0.0681	1
TBOS (minutes)	51.0	128.0	130.8	284.0

Table 2
Correlates of Assessed Land Values
In New Hampshire

Variable	Parameter Estimate	t value
Intercept	87,170	6.44
TBOS	-933.57	-4.96
TBOS square	2.38	3.94
CITY	20,293	2.24
H20	51,363	7.08
SHOP	18,017	1.64*
SKI	13,581	1.66*
N = 235	*10 percent significance level	
Adjusted R^2 = 0.3029		

Simulating Property Tax Reform

In order to illustrate our claim that property tax reform can have substantial redistributive effects, we have simulated a large number of hypothetical tax reform plans using the tax parcel data for a small city in New Hampshire. As Table 3 reveals, Dover is a small, but growing, city north of metropolitan Boston. The city's resident population ranges from poor to affluent, reflecting its history as a New England mill town and the presence of desirable waterfront properties. Because various governmental and nonprofit agencies

have located in Dover, more than 2400 acres of its land area are exempt from property taxation. In addition, more than 5200 acres are both undeveloped and also taxable. In 2000, the market value of taxable land and buildings exceeded $2 billion. The total tax rate on market value collected by municipal, county and state governments and by the public school district was 1.89 percent that year.

Table 3
A Profile of Dover

Land area (2002)   • Taxable   13,188 acres   • Exempt   2,418 acres   • Undeveloped   >5,215 acres
Total population (2000)   26,884
Population change (1990-2002)   2,637
Median family income (1999) $57,050
Family Incomes > $100K (1999)   14.7%
Equalized total tax rate (2002)   1.89%
Equalized valuation (2000) $2.033 billion

Sources: City of Dover Assessor, N.H. Department of Revenue Administration, and U.S. Census Bureau.

Why have we chosen Dover to be our study city? One reason is easy access to tax parcel data from a cooperative municipal assessor. The more important reason is that Dover has a very heterogeneous landscape ranging from a traditional central business district to suburban shopping centers and office parks to undeveloped farmland. Its housing stock ranges from aging apartment buildings to new condo projects and from modest ranch homes to expensive waterfront mansions. (This heterogeneity of taxable properties is confirmed in Tables 4 and 5.) Substantial differences among taxable properties guarantee that property tax reform would tend to redistribute tax payments among property owners. Our simulation results confirm those redistributive tendencies.

Table 4
Characteristics of Developed Parcels (2002)

Land use category	Mean assessed value (Standard deviation)	*Mean value ratio* (Standard deviation)	Pearson correlation
All taxable parcels (N = 8475)*	$214,842 ($424,806)	2.07 (3.61)	+0.2846
Condominiums (N = 849)	$134,373 ($59,485)	3.68 (2.44)	-0.2076
Single family homes (N = 5250)	$198,170 ($86,142)	1.88 (0.79)	+0.4789
Small rentals (N = 982)	$228,580 ($85,735)	2.14 (0.77)	+0.6745
Large rentals (N = 41)	$1,367,538 ($1,985,693)	4.34 (1.82)	+0.3193**
Small commercial (N = 224)	$325,480 ($335,415)	2.37 (1.64)	+0.2690
Large commercial (N = 94)	$669,374 ($1,266,095)	2.73 (2.20)	+0.2733
Industrial (N = 151)	$837,786 ($2,343,502)	4.95 (17.31)	+0.4150

Source: City of Dover Assessor.

* These descriptive statistics apply only to those taxable parcels with positive assessed land values. Several hundred taxable properties in Dover are manufactured homes on rented lots that are assessed as separate properties. Other properties do not have a land assessment and hence their value ratios cannot be computed. Perhaps these properties defy gravity and do not require footprints on firm ground.

* * Except for large rental properties, all Pearson correlation coefficients are significant at the one percent level. The correlation coefficient for large rentals is significant at the five percent level.

Table 5
Assessed Values of Undeveloped Parcels (2002)

	Mean	Standard deviation
Commercial (N = 94)	$103,093	$174,660
Industrial (N = 25)	$103,104	$110,558
Residential (N = 528)	$46,756	$53,806

Source: City of Dover Assessor.

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Our simulation exercise imagines that the state government has enacted legislation permitting cities to adopt two property rates instead of a single uniform rate and to grant a credit on each property tax bill.[2] The dual tax rate is assumed to apply to the municipal and local school taxes, not to the county or statewide property taxes. In 2002, the uniform tax rate to support the public schools and city government of Dover was $13.98 per thousand dollars of assessed valuation. Applied to an aggregate assessed valuation of $1,871 million, this uniform rate raised $26.2 million in 2002. Because there were 9,004 taxable parcels in that year, all of them eligible for the standard credit by assumption, and because the citywide ratio of building values to land values was 2.07, there are various combinations of land tax rate, building tax rate and tax credit that would guarantee revenue neutrality in the aggregate. Some of these combinations are reported in Table 5.

Would the owner of an individual parcel receive a tax hike or a tax cut following adoption of two-rate property taxation? As we have already seen, the answer depends upon such variables as the parcel's value ratio relative to the citywide average, its total assessed value and the magnitude of the credit available to each taxpayer. One should expect, for example, that the owner of undeveloped land would pay more taxes following a shift towards taxing land values more heavily unless the total parcel assessment is modest and the tax credit level is quite generous. On the other hand, the owner of a developed property with a value ratio far above the citywide average (a manufacturing plant perhaps) would probably receive a tax cut after a shift to two-rate property taxation.

If one sorts all taxable properties by land-use category, one can begin to analyze which types of properties are likely to gain and which types are likely to lose after implementation of two-rate property taxation. As reported in Table 4, the average assessed value of a developed parcel in Dover is nearly $215 thousand and the average value ratio is 2.07. Those properties with an assessed value below average stand to benefit from a generous credit on each tax bill. Those properties with a value ratio above average stand to benefit from a shift to taxing land values more heavily. Note that because of a positive correlation between parcel assessment and value ratio these two tendencies work in opposite directions, to a degree, for developed parcels as a group.

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[2] We have assumed a uniform tax credit on every tax bill for several reasons. One methodological reason is that the uniformity assumption simplified our modeling exercise. Another is that we do not have data on the age, income or assets of property owners and hence cannot simulate credits linked to those variables. A practical political reason for offering a uniform tax credit to every taxpayer is that it this provision could broaden support for property tax reform, especially among small business owners. If an age- or income-based credit were implemented instead of a uniform credit on all tax bills, then the tax rate on land values required to finance a revenue-neutral cut in the tax rate on building values would be lower.

Table 6
Revenue-Neutral Land Value Tax Rates for
Combinations of Building Tax Rates and Tax Credits

Maximum tax credit

Building tax rate	$0	$250	$500	$1000	$2000
$13.98	$13.98	$17.55	$21.06	$27.89	$41.17
10.98	20.23	23.81	27.30	34.10	47.35
7.98	26.48	30.06	33.53	40.28	53.51
4.98	32.73	36.29	39.74	46.45	59.65
1.98	38.98	42.49	45.91	52.60	65.75
0	43.11	46.56	49.96	56.64	69.75

Source: Calculations from City of Dover assessment data.

 In an effort to gauge the redistributive impact of property tax reform, we have calculated the tax payments that would be owed on each taxable property in Dover for 29 combinations of land tax rate, building tax rate and credit level.[3] Recognizing that house values vary substantially even within a small city, we have divided homeowners into

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[3] These combinations have already been reported in Table 6. The cell in the table with a $13.98 tax rate for both land and buildings and no credit is the actual uniform property tax in 2002. The remaining 29 cells are alternative combinations of rates and credit that would yield the same amount of aggregate tax revenue. Note that these calculations take existing parcel assessments as given: Existing assessment errors and post-reform capitalization effects are not accounted for in these simulations. If a higher tax rate were actually levied on assessed land values, it is entirely possible that land values would need to be revised downward to take account of tax capitalization effects in the real estate market. Over the longer term, the positive effects of property tax reform on local economic development might increase land prices despite the higher tax rate applied to land values (Nechyba 1998).

three groups: the top thirty percent of homes, the middle forty percent of homes, and the bottom thirty percent of homes, all ranked by total assessed value. Table 7 reports the

Table 7
Single Family Homes, Tax Differences,
Two-Rate Taxation with No Credit

Building rate	$10.98	$7.98	$4.98	$1.98	$0
Land rate	$20.23	$26.48	$32.73	$38.98	$43.11
Top group					
Mean	-$30	-$59	-$89	-$118	-$138
S.D.	$374	$748	$1122	$1496	$1742
Pct. positive	26.1	26.1	26.1	26.1	26.1
Pct. > 10%	9.5	13.4	15.5	16.4	17.6
Middle group					
Mean	+$67	+$134	+$200	+$267	+$311
S.D.	$107	$213	$320	$427	$497
Pct. positive	80.3	80.3	80.3	80.3	80.3
Pct. > 10%	4.0	19.1	37.7	49.4	53.9
Bottom group					
Mean	+$136	+$272	+$408	+$545	+$634
S.D.	$58	$117	$175	$234	$273
Pct. positive	99.2	99.2	99.2	99.2	99.2
Pct. > 10%	17.4	80.3	92.9	95.9	96.5

means and standard deviations (S.D.) of the tax differences that the three homeowner groups would experience if the City of Dover acted to tax building values more lightly and did not introduce a credit at the same time. It is quite clear that movement towards land value taxation would, in the absence of a credit, benefit primarily those with more expensive homes. Nearly 74 percent of the top group of homeowners would enjoy tax

cuts. The average tax cut for those homeowners in the top group would equal nearly $138 per year under a pure land value tax.

Those with more modest homes would tend to lose from lighter taxation of building values if no credit were available on their tax forms. Eighty percent of those in the middle group and essentially all of those in the bottom group of homeowners would face higher tax bills if land values were taxed at a higher rate but no relief were offered in the form of a standard credit. A pure land value tax would result in an average tax hike of $311 for the middle group and a wrenching average increase of $634 for the bottom group. We conclude that a pure land value tax in Dover would, in the absence of a credit provision, have a highly regressive impact on homeowners.[4] This type of property tax reform would also tend to incite political opposition by a majority of homeowners.

Could these political and ethical problems be averted if lighter taxation of building values were accompanied by a tax credit, perhaps a generous one? Table 8 summarizes the tax differences that the three homeowner groups would face if only land values were taxed, aggregate revenue were maintained at the recent level, and credits were permitted. Note that the tax rate on assessed land values would have to increase to nearly $70 per thousand dollars of assessed value in order to finance a (maximum) credit of $2 thousand on each tax bill. A tax rate this high would have significant capitalization effects on land prices, a prospect that would mobilize the opposition of many landowners. Despite the $2 thousand credit level, over 72 percent of the homeowners in the bottom group would experience a tax hike after implementation of a pure land value tax. The average tax hike for this bottom group would be nearly $170 per year. It is our conclusion that a pure land value tax rate would face serious political opposition in Dover even if accompanied by a generous credit.

Our analysis suggests, however, that a more limited form of property tax reform might pass the twin tests of (rough) progressivity and political feasibility. As Table 9 indicates, if the building tax rate were cut to $10.98 annually per thousand dollars of assessed value and an annual credit of one thousand dollars were introduced simultaneously, then many homeowners in the middle and bottom groups would enjoy tax cuts. To be precise, nearly 72 percent of those in the middle group would pay less and almost 80 percent of those in the bottom group would enjoy more disposable income. Note, however, that even in this case of moderate tax rate reform almost four percent of the homeowners in the bottom group would experience tax hikes exceeding ten percent of their previous tax bills because of the relatively low value ratios of their properties. Hence, the progressivity of this restrained version of property tax reform would be imperfect, at best.

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[4] This conclusion assumes, of course, that there is a high positive correlation in Dover between house value and the permanent or life-cycle income of the homeowner. We believe this to be a plausible assumption.

Table 8
Single Family Homes, Tax Differences,
Pure Land Value Tax with Credit

Land rate	$46.56	$49.96	$56.64	$69.75
Max. credit	$250	$500	$1,000	$2,000
Top group				
Mean	-$70	-$6	+$109	+$317
S.D.	$1912	$2086	$2435	$3146
Pct. positive	27.2	28.0	29.4	30.7
Pct. > 10%	18.7	19.7	21.6	24.2
Middle group				
Mean	+$283	+$252	+$181	+$23
S.D.	$532	$567	$638	$779
Pct. positive	76.5	72.2	61.9	39.4
Pct. > 10%	49.5	44.0	34.1	24.8
Bottom group				
Mean	+$583	+$529	+$413	+$170
S.D.	$291	$310	$348	$420
Pct. positive	97.8	96.6	93.0	72.3
Pct. > 10%	94.9	91.3	81.5	44.4

Table 9
Single Family Homes, Tax Differences,
Two-Rate Taxation with Credit

Building rate	$10.98	$10.98	$7.98	$7.98
Land rate	$23.81	$34.10	$30.06	$40.28
<u>Max. credit</u>	$250	$1,000	$250	$1,000
Top group				
Mean	+$50	+$249	+$20	+$212
S.D.	$559	$1133	$928	$1481
Pct. > 10%	12.5	19.8	15.5	20.4
Pct. positive	31.6	37.9	28.8	33.1
Middle group				
Mean	+$47	-$42	+$113	+$20
S.D.	$144	$258	$250	$360
Pct. > 10%	5.1	6.7	18.6	15.0
Pct. positive	64.5	28.4	73.1	40.3
Bottom group				
Mean	+$92	-$66	+$228	+$66
S.D.	$79	$145	$137	$199
Pct. positive	92.9	20.7	96.4	70.1
Pct. > 10%	8.8	3.9	62.4	17.9

Of course, owners of single-family homes are not the only group of taxpayers whose interests need to be taken into account. Condominiums are an increasingly important type of residential property in the United States, and Dover is no exception to that national trend. As previously reported in Table 4, almost 850 housing units in our study city are condos. As Table 10 reveals, most condo owners would benefit substantially from property tax reform. One reason is that many residential condo properties have high value ratios and would benefit from lighter taxation of assessed improvement values. Another reason is that many condos have modest total assessed values and hence a standard credit would confer substantial tax benefits on their owners. If the tax rate on building values were cut to $10.98 and a thousand dollar credit were introduced at the same time, the average tax cut on condos would be $546 and fewer than four percent of condo owners would face a substantial tax hike. It appears, then, that a large majority of condo owners could be organized to support moderate two-rate property taxation with a credit.

Table 10
Residential Condominiums,
Tax Differences with Two-Rate Taxation

Building rate	$10.98	$10.98	$10.98	$7.98	$7.98	$7.98
Land rate	$20.23	$23.81	$34.10	$26.48	$30.06	$40.28
Maximum credit	0	$250	$1,000	0	$250	$1,000
Mean	-$69	-$189	-$546	-$137	-$258	-$603
S.D.	$145	$228	$488	$290	$369	$609
Pct. positive	19.4	11.4	7.5	19.4	11.9	9.2
Pct. > 10%	5.2	5.2	3.9	8.7	7.9	6.2

Because of the diversity of commercial and industrial properties in Dover, their owners are unlikely to speak with a unified voice about property tax reform. Although the average industrial property would owe a smaller payment after the introduction of dual tax rates, almost half of the industrial parcels would owe more, not less, money to the tax

collector. (See Table 11.) If a thousand dollar credit accompanied the arrival of two rates, then more than a third of the city's industrial properties would see their tax payments increase by more than ten percent. Although this shifting of statutory tax burden to some industrial properties might strengthen the support of homeowners for tax reform, it could also have a negative impact on the local business climate**.**

At least half of the large commercial properties in our study city would pay higher taxes after reform of the local property tax. (See Table 12.) The proportion of commercial properties with large (over ten percent) tax increases would exceed forty percent if the reform package included a generous credit provision. These results are:

Table 11
Industrial Properties,
Tax Differences with Two-Rate Taxation

Building rate	$10.98	$10.98	$10.98	$7.98	$7.98	$7.98
Land rate	$20.23	$23.81	$34.10	$26.48	$30.06	$40.28
Maximum credit	0	$250	$1,000	0	$250	$1,000
Mean	-$1,291	-$1,068	-$457	-$2,582	-$2,359	-$1,758
S.D.	$6,092	$5,774	$5,060	$12,183	$11,859	$11,017
Pct. positive	44.4	45.7	52.3	44.4	47.0	44.4
Pct. > 10%	24.5	27.2	35.1	33.8	33.1	35.8

Table 12
Large Commercial Properties,
Tax Differences with Two-Rate Taxation

Building rate	$10.98	$10.98	$10.98	$7.98	$7.98	$7.98
Land rate	$20.23	$23.81	$34.10	$26.48	$30.06	$40.28
Maximum credit	0	$250	$1,000	0	$250	$1,000
Mean	-$418	-$56	+$966	-$836	-$472	+$535
S.D.	$1654	$1122	$2549	$3307	$2672	$2376
Pct. positive	52.1	58.5	72.3	52.1	55.3	63.8
Pct. > 10%	19.1	29.8	48.9	31.9	37.2	47.9

perhaps surprising, but they can be explained by the relatively low value ratios of many commercial parcels. (See Table 4 once again.)

And how would the owners of undeveloped land parcels fare after a shift to two-rate property taxation? Without a credit, all owners of vacant land would pay more; with a credit, owners of small land parcels with modest assessed values would pay less. As Tables 13 demonstrates, a $1,000 annual credit combined with a relatively modest increase in the land tax rate (to $34.10 per thousand) would protect more than half of the vacant residential lots from higher taxes.[5] Thus, although real-estate developers with large landholdings would probably oppose introduction of two-rate taxation, the pairing of dual tax rates with a standard credit would discourage owners of low-valued vacant lots from joining the opposition to property tax reform.

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[5] One might wonder why there are a few land parcels that would not owe higher tax payments after a shift to a higher rate on land values in the absence of a credit. These are lots available for (re)development that have small but positive building values already in place.

Table 13
Residential Land,
Tax Differences with Two-Rate Taxation

Building rate	$10.98	$10.98	$10.98	$7.98	$7.98	$7.98
Land rate	$20.23	$23.81	$34.10	$26.48	$30.06	$40.28
Maximum credit	0	$250	$1,000	0	$250	$1,000
Mean	+$290	+$267	+$296	+$581	+$553	+$561
S.D.	$336	$485	$858	$672	$822	$1189
Pct. positive	99.8	51.5	45.5	99.8	60.2	49.6
Pct. > 10%	99.6	50.8	41.9	99.8	58.7	49.1

The conclusion of this study is that it is possible to design a property tax reform proposal that promises to cut the tax rate on building values, hold aggregate tax revenue constant, and avoid regressive impacts on most homeowners. However, if the authors of such a reform proposal wish to achieve these three policy goals, then they need to incorporate a credit (or similar provision) in their plan, along with the introduction of dual tax rates, and also fully account for local circumstances within the taxing jurisdiction. In some localities, existing land assessments might provide an adequate basis for property tax reform. In other jurisdictions, however, inaccuracy of land value assessments would require that property revaluations precede implementation of dual tax rates and a credit provision. The devil, it seems, is in the details of property tax reform.

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