



Waterbury and Naugatuck Revaluation Study

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Executive Summary

The Grand Lists of Waterbury and Naugatuck reflect property values for 1980. As a result the mil rate required to support the current town budgets is 46% higher than it should be. In both towns, personal property, such as motor vehicles and machine tools, Public Act 490 land, such as farm land and land used for mining of forestry, and commercial and industrial real estate are burdened significantly higher than they should be. Residential real estate and vacant land in both towns are burdened significantly lower than they should be. Apartments in Waterbury are burdened 45% higher than they should be resulting in a reduced housing stock there.

These facts result from the relative changes in value of property in these categories over the last eighteen years. Severe economic consequences arise from the current skewed distribution of tax burden. Businesses in Waterbury and Naugatuck have incentive to relocate and potential newcomers are deterred because taxes on their motor vehicles and equipment are 46% higher than necessary. Homeowners enjoy 26% lower taxes on their real estate but 46% higher taxes on their motor vehicles. Small office and home office proprietors pay 46% higher taxes than necessary on their equipment (computers, instruments, tools).

The current situation lacks fairness and equity and broadcasts that Waterbury and Naugatuck do not have to play by the rules to which all other towns in Connecticut are subject.

There is no benefit to phasing in the changes in tax burden a revaluation would entail. As Connecticut now requires an abbreviated revaluation every four years, superimposing various tax increases and decreases would confound and confuse assessors and taxpayers.

We see far graver consequences of maintaining the status quo than for performing a high quality and thorough revaluation in Waterbury and Naugatuck. In the revaluation process, paper records can be computerized reducing future costs.

Introduction

The towns of Naugatuck and Waterbury have asked the Connecticut Center for Economic Analysis to perform an analysis of changes in property tax burden for the major property categories in these towns based on current estimated valuation. At this time both towns use a Grand List developed in 1980 to determine property tax burden. The new distribution of burden is based on a revenue neutral estimation of a new mil rate, that is, the mil rate required to support the current budget given current estimated property values based on median sales ratios. The tax burden is calculated from the new mil rate applied to current estimated assessed values (70% of estimated current market values).

In the following report, we detail the impact of the calculated mil rate on tax burden for major property categories and the economic implications of the redistribution of burden. We discuss the consequences of not having performed a revaluation of properties in Waterbury and Naugatuck for eighteen years.

We examine some strategies for phasing in the projected changes in tax burden. As personal property is currently grossly over-burdened because the eighteen-year old mil rate is applied to current assessed values, we recommend no phase-in.

We calculate the frequency distribution of tax burden changes based on all property sales in the towns from 1995 through 1996 (inclusive), and, we depict these same changes aggregated by Census tract as well (for a geographic distribution). This portrayal provides a different perspective for understanding burden distribution changes.

A brief theoretical analysis of the impact of property changes concludes the study. The Office of Policy and Management is the source for most of the data used in this study.

Impact of Revaluation on Waterbury and Naugatuck

Based on the Equalized Net Grand List for 1995 – 1996 for Waterbury and Naugatuck, we have calculated a revenue neutral revaluation for both cities. The analysis calculates the current town budget based on the current mil rate and the aggregate value of assets in each town in the following categories: personal property including motor vehicles; machine tools and equipment, and all other physical capital except the buildings necessary to operate a business; Public Act 490 land (e.g., land used for farming or forestry); commercial/industrial/utility real estate; apartments; residential real estate; and, vacant land. The current town budget divided by 70% of the current (after revaluation) Grand List yields a new, revenue neutral mil rate. Applying this new mil rate to 70% of the current valuations in each of the above categories yields the new tax burden in that category. We then calculate the percent change in burden for each category. These statistics are summarized in the following tables.

Projected Impact of Revenue Neutral Revaluations in Waterbury and Naugatuck

	Waterbury	Naugatuck
Current Mil Rate	74.64	55.6
Projected Mil Rate	40.57	30.06
Percent Change	-45.65	-45.94

The preceding table illustrates the general result that the average tax rate required to support the current budget in Waterbury and Naugatuck declines by 46%, because, in general, aggregate property values have risen substantially in eighteen years. The following table shows how much the tax burden has changed for each category of property. Negative changes indicate that the property category is currently over-taxed and would experience a tax reduction, while the reverse is true for those categories with positive changes.

Projected Shift in Average Tax Burden by Category

	Waterbury	Naugatuck
Personal Property	-45.65%	-45.93%
P A 490 Land	-45.65%	-45.93%
Commercial/Industrial/Utility Real Estate	-6.52%	-30.17%
Apartments	-44.78%	+20.92%
Residential Real Estate	+25.98%	+20.92%
Vacant Land	+56.57%	+77.69%

Several conclusions emerge from this analysis that apply to both towns:

- 1) The current distribution of value and tax burden in each town appears hostile to business because the burden on personal property (for example, machine tools and motor vehicles) is currently 45% higher than it should be. Business bears a disproportionate and inequitable tax burden on its real estate, and, especially, on its personal property. Thus, businesses are discouraged from expanding or locating in these towns, and in some circumstances would choose to relocate, diminishing both the employment base for the region, as well as the tax base.

- 2) The current distribution of value and tax burden in these towns creates perverse incentives. Undeveloped, vacant land bears little tax burden (56% lower than it should be in Waterbury and 77% lower than it should be in Naugatuck on average). Developed, commercial property carries a heavy burden (almost 7% higher than it should be in Waterbury and 30% higher than it should be in Naugatuck on average), discouraging development of commercial properties. Apartment units in Waterbury bear an inequitable tax burden (45% higher than they should be), and few seem to have been built. This situation has significant consequences for the housing stock of Waterbury and has slightly less impact on the housing stock of Naugatuck.

- 3) The current skewed distribution of value and tax burden in both towns sends a profoundly negative signal. It says that businesses cannot trust governments, municipal and state, to play by the rules. There is no virtue in being exceptional when that means providing exceptions to the rules by which we all should play.
- 4) The current skewed distribution of value and tax burden thus creates disincentives to economic growth and distorted incentives for land development in both towns. In Waterbury especially, there are strong disincentives for adding to its housing stock.

Real Estate Sales and The Distribution of Tax Burden

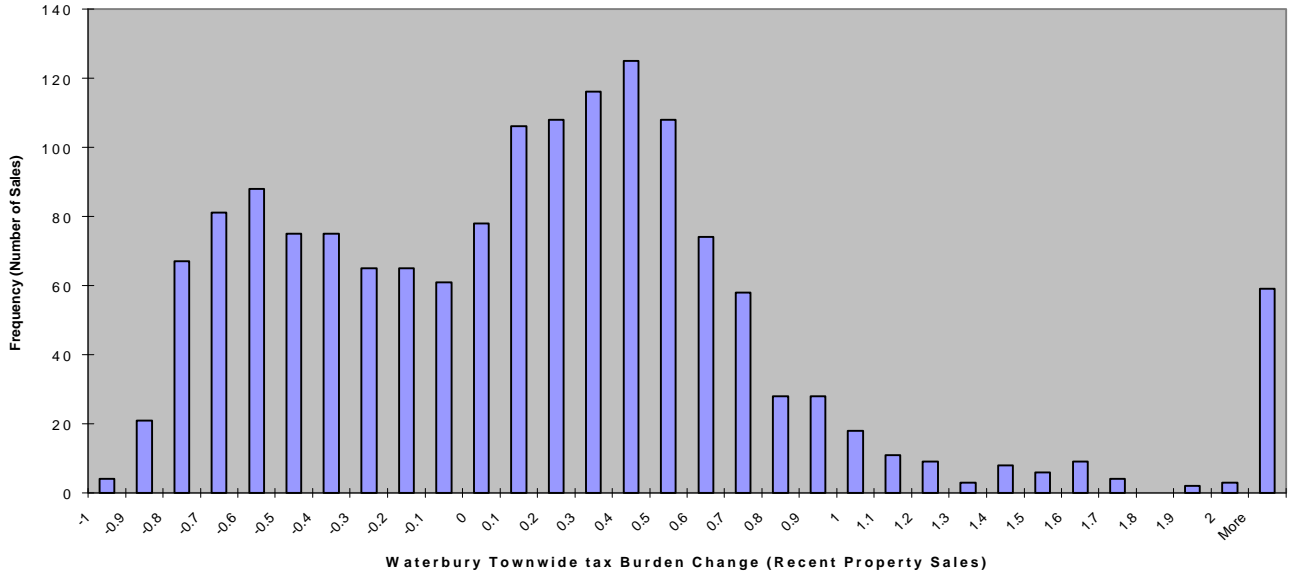
We examined the record of recent (1995-1997) real estate sales in the two towns to get an idea of the distribution of the change in tax burden by decile of percent change and by tract. For example, if a house in Waterbury sold for \$X and its (eighteen year old) assessed value is \$Y, we calculate the change in burden by first multiplying the sale price by .70 and by the new mil rate (40.57 mils); call this 'new burden'. Multiply the assessed value by the current mil rate (74.64 mils); call this 'old burden'. Subtract the old from the new burden and divide the result by the old burden to obtain the percent change (after multiplying by 100). The changes in burden are sorted in ascending order and grouped by frequency in bins of 10% change.

We observe that the majority of tax burden changes is within a band of -40% to +80% in Naugatuck with a mean of 32% (Figure 1), and within a band of -80% to +100% in Waterbury with a mean of 31% (Figure 2). There are a few properties in Waterbury that will experience a burden change of up to 30 times the current burden. In Naugatuck that maximum is nine times the current burden.

We stress that the data portrayed aggregates the sales of all property types (except personal property) with no weighting. The distributions therefore don't necessarily follow the pattern exhibited by any individual property category.

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Figure 2: Tax Burden Change for Recent Sales in Waterbury



Positive Reasons For NOT Doing Revaluation

There seems to be only one positive result of not performing a revaluation in the towns of Waterbury and Naugatuck: those property owners who would receive tax increases would not if no revaluation were done. One has to realize that the increases in residential tax burden are offset by decreases in personal property tax burden. The increase in value of residential property is about *half* (1.5%) of the average inflation rate over the past eighteen years. The positive reasons for not doing a revaluation pale in the face of continued inequity and lack of fairness.

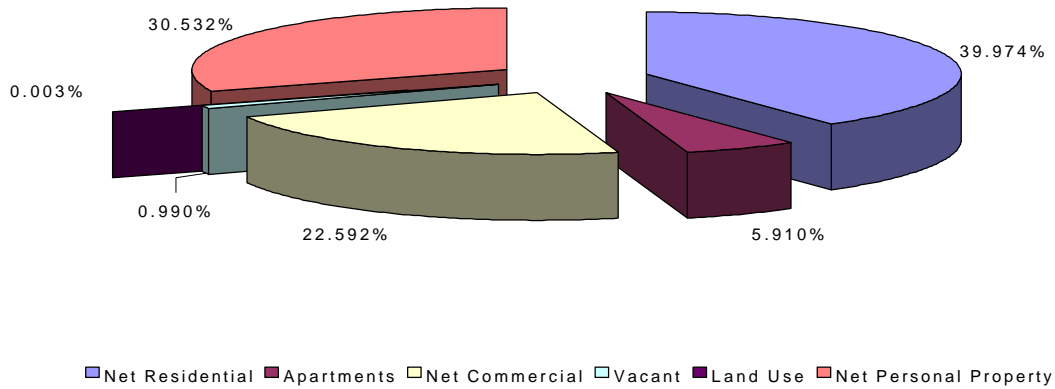
Consequences of Maintaining the Status Quo

In the current fiscal climate of Waterbury and Naugatuck, businesses have an incentive to relocate to towns where personal property tax rates are reasonable. The same incentive applies to owners of motor vehicles, especially those with newer and several vehicles. Residential property owners are paying unrealistically low taxes. The stock of apartments in Waterbury is lower than it should be because apartments are burdened at an unrealistically high rate. This discourages new apartment construction. Rents are higher and the vacancy rate is likely greater than in surrounding towns. Owners of small offices and home offices (SOHO) have incentives to relocate, because their personal property is burdened at extraordinary tax rates. In general, the status quo lacks fairness and equity in the distribution of value and the concomitant tax burden.

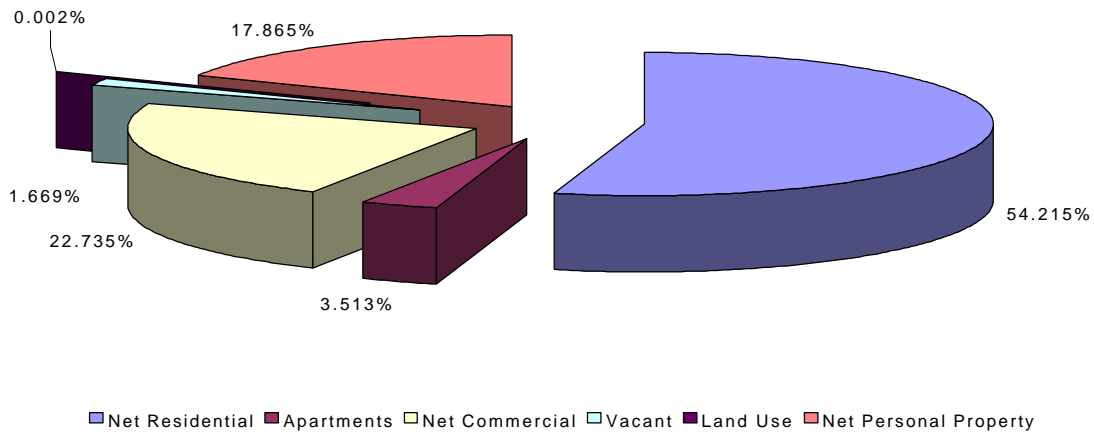
In any case, performing a townwide revaluation would *not* induce individuals to flee to other towns. The redistribution of tax burden in both towns has offsetting components. Its magnitude is not so great as to uproot people who have formed relationships in their communities and neighborhoods.

The following two charts illustrate the distribution of Waterbury's Grand List over the six property categories for 1980 and 1996. It is striking that residential property makes up a much larger fraction of the Grand List (39% in 1980 and 53% in 1996). Similarly, personal property, such as motor vehicles and machine tools, shrinks from 39% in 1980 to 18% in 1996. Commercial/industrial and utility real estate remains virtually unchanged as a fraction of the two Grand Lists.

Waterbury Property Category as a Fraction of Grand List 1980



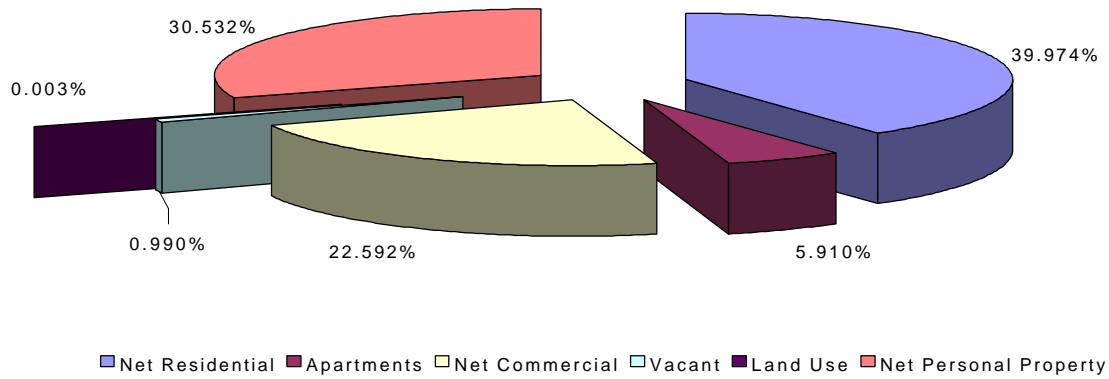
Waterbury Property Categories as a Fraction of Grand List 1996



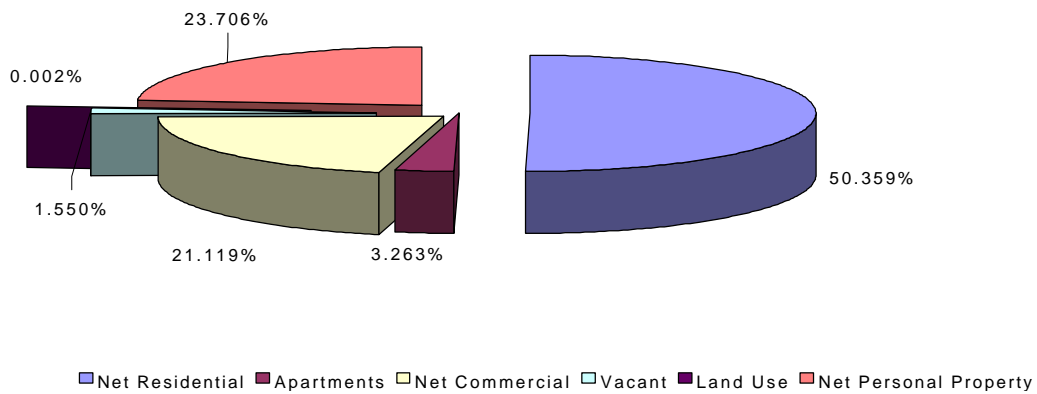
Now consider the support that each property category provides to the Waterbury town budget. The following two charts show that residential property contributed 39% of the budget in 1980, personal property contributed 31% and commercial/industrial/utility real estate contributed 23%. There is a striking difference in 1996: residential property

now contributes 50% of Waterbury's town budget, personal property contributes 24% and commercial/industrial/utility real estate contributes 2% less or 21% of the town budget.

Waterbury Property Categories' Contribution to Town Budget 1980



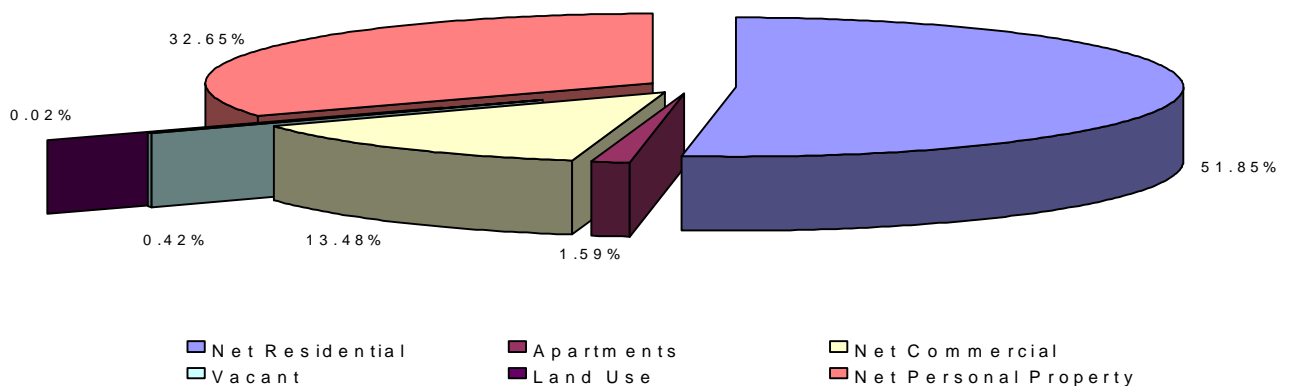
Waterbury Property Categories' Contribution to Town Budget 1996



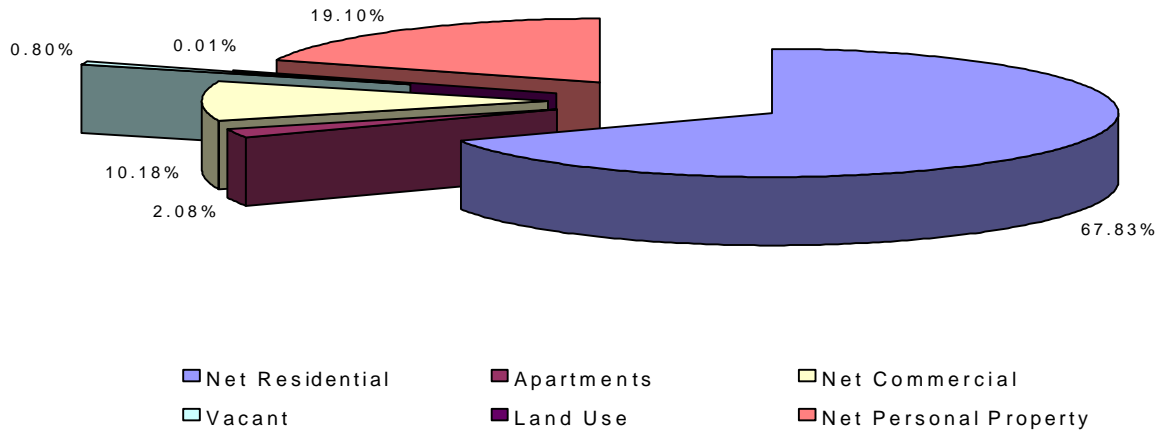
The conclusion we draw is consistent with what was discussed above. Personal property bears an unrealistically *high* burden while residential real estate bears an unrealistically *low* burden. There is an emerging trend in the distribution of the support for Waterbury's town budget: homeowners are bearing more of the burden for supporting the town's budget and hence, its services, while businesses are tending to bear less. This trend is likely to continue as businesses seek to avoid the high personal property taxes by relocating part or all of their operations outside Waterbury, especially those firms whose equipment is easily transported. New firms thinking of locating in Waterbury would be deterred because of the unfavorable tax burden their vehicles and equipment would bear.

The situation is similar in Naugatuck. The following two charts illustrate the distribution of Naugatuck's Grand List over the six property categories for 1980 and 1996. It is again striking that residential property makes up a much larger fraction of the Grand List in 1996 (68%) compared to 53% in 1980. Similarly, personal property, such as motor vehicles and machine tools, shrinks from 33% in 1980 to 19% in 1996. Commercial/industrial and utility real estate shrinks from 13.5% in 1980 to 10% in 1996.

Naugatuck Property Category as a Fraction of Grand List 1980

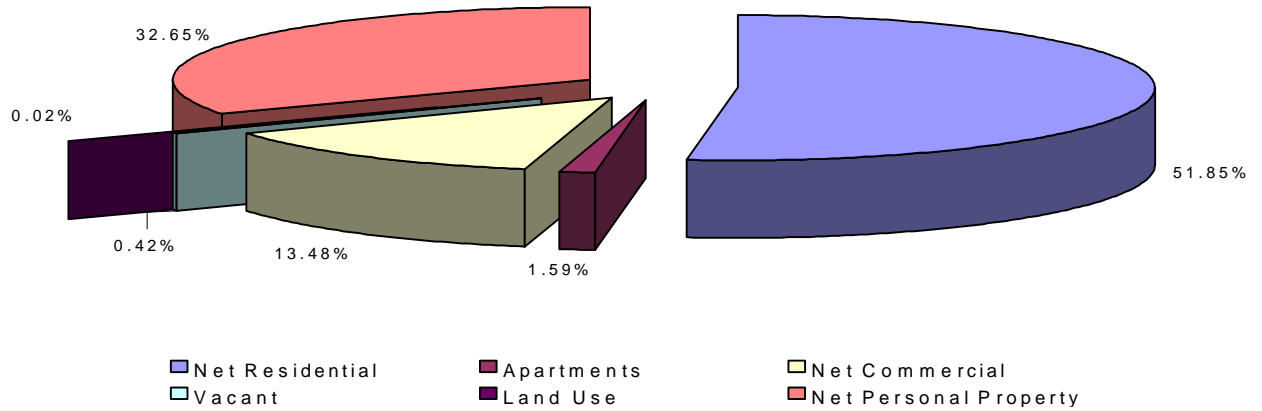


Naugatuck Property Category as a Fraction of Grand List 1996

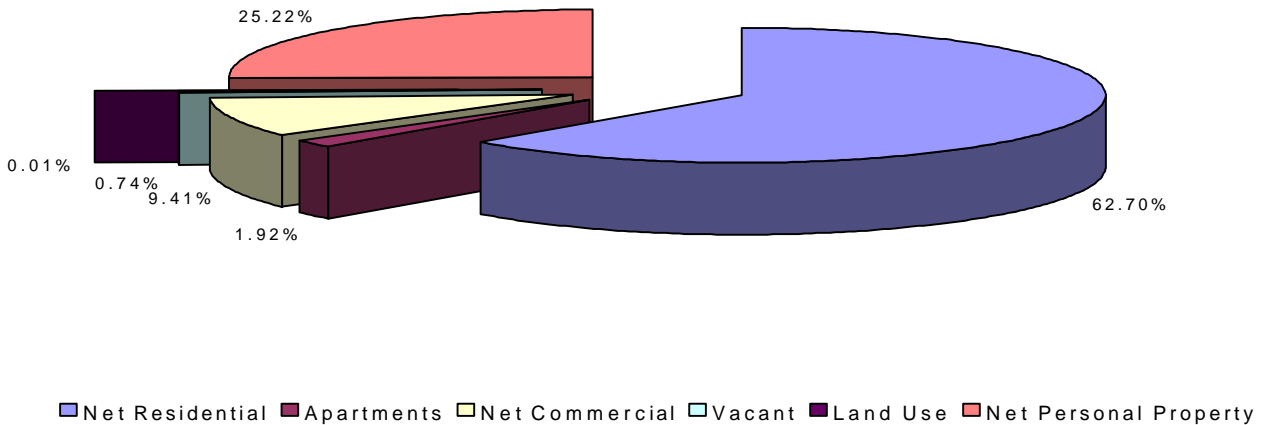


Consider the support that each property category provides to the Naugatuck town budget. The following two charts show that residential property contributed 52% of the budget in 1980, personal property contributed 33% and commercial/industrial/utility real estate contributed 13.5%. There is a striking difference in 1996: residential property now contributes 63% of Naugatuck’s town budget, personal property contributes 25% and commercial/industrial/utility real estate contributes 4% less or 9.4% of the town budget.

Naugatuck Property Categories' Contribution to Town Budget 1980



Naugatuck Property Categories' Contribution to Town Budget 1996



The conclusion we draw for Naugatuck is consistent with what was discussed above. Personal property bears an unrealistically *high* burden while residential real estate bears an unrealistically *low* burden. There is an emerging trend in the distribution of the support for Naugatuck’s town budget: homeowners are bearing more of the burden for supporting the town’s budget and hence, its services, while businesses are tending to bear less. This trend is likely to continue as businesses seek to avoid the high personal property

taxes by relocating part or all of their operations outside Naugatuck, especially those firms whose equipment is easily transported. New firms thinking of locating in Naugatuck would be deterred because of the unfavorable tax burden their vehicles and equipment would bear. As homeowners bear more of the burden for supporting existing town services, the quality and level of these services are likely to decline because homeowners are traditionally resistant to tax increases for all but essential services. Thus Waterbury and Naugatuck residents face a decline in their quality of life as their share of the burden for supporting it increases.

Phasing In Burden Changes

Phasing in the changes in tax burden over three, five or seven periods entails proportional increments or decrements to the taxpayer's bill over the period. The *median* residential property in Waterbury increased by 132% over the period in assessed value terms. For example, a Cape and land owned by John Doe, assessed at \$40,000 in 1980 would, on average, be assessed at \$92,800 today. The current tax bill is \$2,985 and the new bill would be \$3,764 representing a 26% increase in burden. A three-year phase-in entails three equal payments of \$259.67 per year to satisfy the increase. Similarly, a motor vehicle (or machine tool) worth \$10,000 in assessed value that experiences a 45.65% drop in tax burden would yield \$113 less tax paid annually for the same period. In this case, the burden before the tax change is \$746 and after the change it would be \$406. A household with one such vehicle and one assessed at \$2,000 would experience a total tax reduction of \$408 (\$136 for three equal payments) and would offset 53% of the house and land increase!

The situation in Naugatuck is even more striking because residential property is taxed on average 21% higher than it should be compared to Waterbury's 25% elevation. To illustrate this point, consider a Cape and land owned by Bob Mezzo, Chamber member, at

63 Beacon Manor Circle assessed at \$30,000 in 1980. The median residential property rose 124% over the period meaning that this property would be assessed at \$67,200 today yielding \$2,020 in tax, an increase of \$352 or three equal payments of \$117. Bob's family owns two motor vehicles assessed at \$12,000 in total and their combined tax yield is \$306 less with the new mil rate (30.06 mils), and in three equal payments is \$102 less per year for a three-year phase-in period. This decrease offsets 87% of the real estate increase!

We do not recommend phasing in the changes in burden over a period of years. In both towns personal property will bear a significantly lower burden after the revaluation than it now does. Businesses and owners of motor vehicles will favor the most rapid reduction in their tax burdens. Accomplishing such reductions with alacrity will induce businesses (and homeowners) to stay put and new ones to locate in these towns. Connecticut now requires towns to implement a 'statistical' revaluation (actually something more than purely statistical and something less than measuring buildings and aerial mapping) every four years, and a full, physical revaluation every twelve years (CT State Statutes 12-129, 12-62A, 12-62C, and, 12-117). Therefore, superimposing phased-in changes in value and burden will confound and confuse assessors and taxpayers. We believe that with appropriate education, all taxpayers will support the changes necessary to have Waterbury and Naugatuck conform with current real estate and land values. This action in turn will encourage economic growth and return increased tax revenue to these towns.

Evaluation of Specific Waterbury Properties

The Chamber requested that 20 commercial properties in the downtown area be revalued as above. We calculated the median sales ratio for all commercial/industrial/utility property sales in Waterbury for the 1995-1996 fiscal year and a 90% confidence interval about the median. The former provides an estimate of the 1996 market value for each property, and, the latter an upper and lower bound in which the estimate would be found with a probability of 90%. The following table contains a description of the property, its address and associated values.

DOWNTOWN PROPERTIES FOR INCLUSION IN REVALUATION STUDY

Address	Building Type	Name or reference Point	1980 Assessed Value	1996 Estimated Market Value	90% Confidence Interval:	
					Lower Est. Market Value	Upper Est. Market Value
83 Bank Street	Condo's, share office space, office on top; retail at bottom	Chamber of Commer Office Bldg., Ideal Jewelers	\$428,850.00	\$796,526.75	\$692,699.08	\$867,941.71
20 East main Street	Retail at bottom, office on top	Brown building: Lombard Center	\$777,500.00	\$1,444,093.61	\$1,255,855.27	\$1,573,568.10
114-138 Bank Street	Retail at bottom, vacant on top	Howland Hughes Building	\$899,500.00	\$1,670,690.94	\$1,452,915.52	\$1,820,481.68
50 Leavenworth Street	100% office	Carmody & torrance Law Offices	\$675,500.00	\$1,254,643.39	\$1,091,099.98	\$1,367,132.16
1 Exchange Place	One of only a couple Class A Office, Space buildings in Waterbury	Fleet bank	NO DATA			
452 Meadow Street	Newspaper Building/Old Railroad Station	Waterbury Republican-American Building	\$112,000.00	\$208,023.77	\$180,907.77	\$226,674.76
145 Bank Street	Bank	Webster Plaza	\$2,355,000.00	\$4,374,071.32	\$3,803,908.90	\$4,766,241.65
68 Bank Street	Mixed use	Apothocary Building, corner of Bank and South Main	\$183,480.00	\$340,787.52	\$296,365.69	\$371,341.83
100 Grand Street	Mixed use, retail on bottom, offices on top	Newsrack, NVDC offices, Brass City Tobacconists	\$324,500.00	\$602,711.74	\$524,147.96	\$656,749.65
21 Leavenworth Street	Restaurant	Drescher's Restaurant	\$118,900.00	\$220,839.52	\$192,052.98	\$240,639.55
2 North Main Street	High rise	Plaza on the Green	\$2,100,000.00	\$3,900,445.77	\$3,392,020.68	\$4,250,151.79
101-115 South Main Street	mixed use, state mental services clinic on the corner	Leeward Building	\$567,000.00	\$1,053,120.36	\$915,845.58	\$1,147,540.98
63 Grand Street	Hotel	Courtyard by Marriott	\$2,739,500.00	\$5,088,224.37	\$4,424,971.73	\$5,544,424.21
207-229 Bank Street	Historical building on top, offices and restaurant on bottom	Buckingham Square, Griggs Building, Diorio's Restaurant on bottom	\$1,279,880.00	\$2,377,191.68	\$2,067,323.53	\$2,590,325.84
47 Holmes avenue	Former house converted to office space	Biondi and rosengrant real Estate Offices	\$28,070.00	\$52,135.96	\$45,340.01	\$56,810.36
154 Grand Street	Retail on bottom, residential on top	Fine Craft Jewelers	\$118,300.00	\$219,725.11	\$191,083.83	\$239,425.22
48-50 Mitchell Avenue	Office, vacant	Red brick building after 7 Eleven on Willow Street	\$136,000.00	\$252,600.30	\$219,673.72	\$275,247.93
97 East Main Street	Converted office space	Grants Building	\$1,234,460.00	\$2,292,830.61	\$1,993,958.97	\$2,498,401.13
96 Bank Street	Retail/Office mix	Jones Morgan Building	\$600,000.00	\$1,114,413.08	\$969,148.76	\$1,214,329.08
35 East Main street	Retail/Office mix	Platt Building	\$140,000.00	\$260,029.72	\$226,134.71	\$283,343.45

Theoretical Background: Tax Incidence Analysis after a Tax Change

1. Introduction

There are two kinds of tax incidences. The statutory incidence of a tax defines who is legally responsible for paying the tax¹. For example, sellers are responsible for paying sales tax to the state and employees are responsible for their own income tax. The burden of a tax is the amount paid by those whom it affects. The buyer or seller may bear some or none of the price change depending on several factors. These factors are the responsiveness of the quantity of hours worked (the supply of labor) to changes in the wage rate because of a tax change, or, the responsiveness of demand to a change in the price of a good due to a tax change. In contrast, the economic incidence of a tax is the change in distribution of private real (that is, inflation adjusted) income brought about by a tax. Tax changes alter relative prices and therefore induce behavioral changes.

With respect to partial equilibrium, the economic incidence of tax analysis helps determine market price and equilibrium output. With respect to general equilibrium, tax incidence analysis also helps to explain the possible change in employment, wages, investment and the distribution of income. The income distribution effect is reflected by the tax being proportional, progressive or regressive. In this study, we focus on a tax change on property, specifically real estate, including residential, commercial, and vacant land and its impact.

2. Residential Property

Most property taxes levied are a certain percentage of the assessed value of the property. This kind of tax is called an ad valorem tax. Unlike a unit or lump sum tax that changes price uniformly across different values of property, the effect of an ad valorem tax on price depends on the value of the property. For example, Figure 1 depicts equilibrium in a residential housing market with some pre-existing tax. Although there are many factors affecting the demand for a parcel of property, including amenity values and the com-

munity in which the property is located, for purposes of illustration, we simply assume that the value of the property depends mainly on the area of the property. The vertical supply curve represents the fact that the housing stock available within a short period of time is fixed, although in the long run there will be changes due to real estate investment or destruction of existing property.

Suppose there is an increase in the ad valorem tax rate. For a given property, the owner can only receive payment equal to the market value minus the amount of tax on the property if he/she decides to sell the property. This is shown by a downward shift of the demand curve. The size of the shift increases with the size of the property due to the nature of the ad valorem tax. The equilibrium quantity is still Q_0 because the quantity is fixed in the short run. The market value of the property, however, decreases by the amount of the tax increase. In this case, the owner of the property is the only bearer of this increased tax burden.

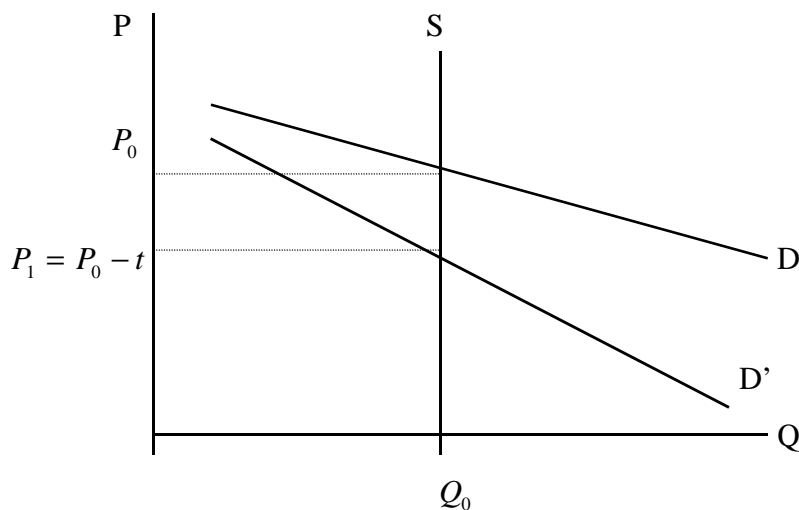


Figure 1

Basically, a residential property tax is progressive, proportional, or regressive with respect to nominal income as the nominal income elasticity (responsiveness) of demand for

¹ See Rosen(1992) "Public Finance" 3rd edition.

housing is greater than, equal to, or less than unity². Empirical studies of housing demand exhibit mixed results with respect to responsiveness. Therefore, we can't say in general whether residential taxation is progressive or regressive. With the simple assumption that the market value of residential property depends mainly on property size, and appealing to common sense, we have that the size of the property is an increasing function of the owner's permanent income³. Clearly the fall in market value is greater for larger properties than small properties. So the ad valorem tax is progressive, reducing the wealth of the rich proportionately.

The fall in market value of residential property due to tax increases in one area discourages investment in real estate in that area. This effect together with the fall in income of homeowners reduces consumption in that area, which has a negative impact on businesses and employment in that area. The magnitude of the impact has to be analyzed on a case by case basis.

3. Commercial Use Land

The most distinctive characteristic of commercial use land is that it provides its owner with resource rent, which is measured as the economic profit after all the productive factors have been paid according to their marginal productivity. In a competitive market, the current market value of the land is the present discounted value of the stream of future rents. Therefore, when there is a change in the tax rate on land, the price of the land changes by the present value of all future tax payments. The process by which a stream of taxes becomes incorporated into the present price of land is referred to as capitalization.

² See Aaron(1974) "A New View of Property Tax Incidence" American Economic Review, 64(2), May, pp. 212-21

³ For empirical evidence, also see Mason Gaffney(1972) "What is Property Tax Reform?" American Journal of Econ. and Soc., April, 31, pp. 129-53. He suggests that land ownership is distributed very progressively with respect to income.

If we still assume that the supply of land is inelastic, due to the limitation of land availability, an increase in the tax rate would raise its price. See Figure 2.

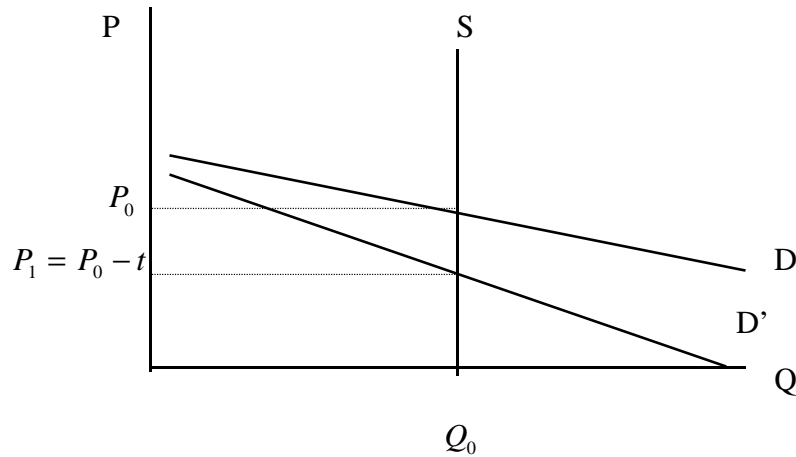


Figure 2

The demand curve is drawn fairly flat to reflect that the mobility of capital shifting among towns or counties is fairly high. Thus, in response to an increase in the tax rate businesses would relocate to avoid a decrease in their net rate of return. In this case, the landlord is bearing the full burden of the tax increase.

On the other hand, if there is developed but not utilized land available when the tax change happens, the supply can not be treated as perfectly inelastic (that is, vertical). The tax change would change both the equilibrium price and quantity. Figure 3 illustrates the change and the sharing of the tax burden by landlords and the renters (including businesses and tenants renting apartments).

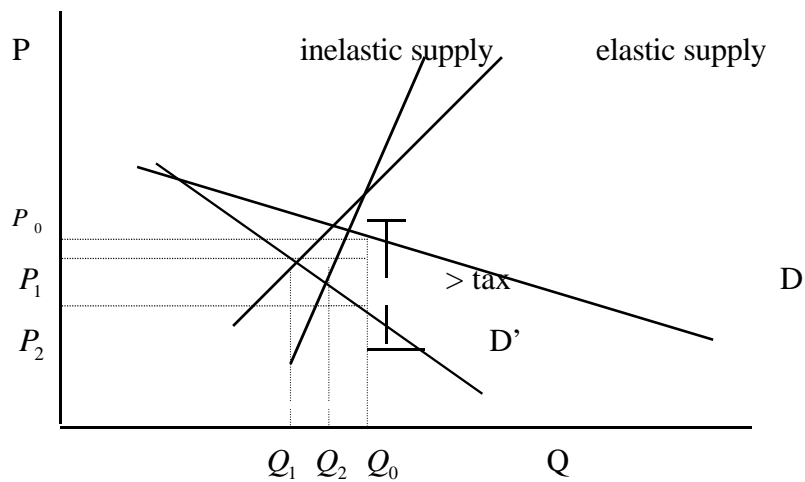


Figure 3

In Figure 3, there are two differently sloped supply curves, depending upon the availability of developed and underutilized land. The steeper one (inelastic supply) has less underutilized land, hence a smaller elasticity of quantity change with respect to a tax change. The flatter one (elastic supply) has comparatively larger elasticity, implying more underutilized land. At the initial equilibrium quantity of land Q_0 , the vertical distance between D and D' is the amount of tax imposed on that size of land. In the absence of a perfectly inelastic supply curve, the tax burden is shared by both landlords and renters. With the inelastic supply curve, the tax burden falls mainly on the landlord. The operative intuition is that while renters are able to move to new apartments readily, landlords remain tied to their properties. Therefore, the landlord bears more of the tax burden. With the elastic supply curve, it is not so clear who bears more tax burden. It depends on the relative slopes (elasticity) of the supply and demand curves. Actual outcomes vary from case to case.

In Figure 3, we see that under some conditions, landlords could pass some of the tax burden on to tenants through a change in rent. The increase in rent would decrease the rate of return on business capital. If the elasticity of demand is fairly high for commer-

cial use land, it's quite possible that many of the businesses would move to the surrounding areas where the tax does not change. New investment would hesitate to come into the area with a higher tax rate. In the long run, it would hurt the development of the area. In the short run, with businesses moving out of the area, employment would fall, and, as a natural consequence, so would people's income. Local government should be concerned about the multiplier effect of this negative shock in investment.

We are implicitly assuming that the area of interest has the same tax rate as the surrounding area prior to a tax increase. The increased tax causes a comparatively higher tax rate that induces businesses to move to other areas. If the tax rate of the area of interest was lower than the surrounding areas prior to its increase, the outflow of investment is not a necessary result.

Blake (1979) also suggests that capitalization not only includes the straightforward application of a discount rate to the change in the tax rate, but also the tax on future improvements. This situation is called over-capitalization, though the (negative, see below) over-capitalization of developed land is not very dramatic.

In a more general model incorporating a labor market into the analysis, one way for businesses to shift their tax burden to other parties is to lower the wage of their workers. Of course, this shift requires that the business have some market power, at least with the labor market, to change the prevailing wage rate. How much the tax burden can be shifted to workers also depends on the relative elasticity of the supply of and demand for labor.

The above analysis is based on an increase in property tax rates. In some cases, the actual change is a tax cut. The effect then would be the opposite as illustrated above. A tax cut, in the short run, if not leading to increased new investments, will at least increase the rate of return on capital. Depending on how businesses spend their profits, the tax cut can lead to expansion of existing businesses, increased workers' benefits, or posi-

tive contributions to the welfare of the community. All these further lead to higher income for workers, more consumption expenditure and more expansion. In the long run, a tax cut would accelerate the area's economic development.

4. Vacant land

A tax increase on vacant land involves the same principle of analysis as residential property and commercial use land. A tax increase drives down the market value of vacant land. The distinguishing characteristic of vacant land compared to the other two kinds of properties is that there is dramatic negative over-capitalization⁴. The reason is that the capitalization includes not only the current value of the land itself, but the tax on eventual improvements as well. Therefore, the market value of vacant land will decrease dramatically in the presence of a tax increase. The tax burden is completely borne by the owner.

This change in the price of vacant land has a two-fold effect. First, the income of the owners will fall as result of reduced land price. It leads to falling income, thus decreasing consumption. Second, the reduced land prices are likely to induce investors to purchase the land at the low price and develop it into commercial or residential property to capture latent profit. The net effect on the area's economic development is not clear. The exact result depends on the situations in a specific area.

⁴ See Blake (1979).