



WHY CALL FOR PROPERTY TAX RELIEF?

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As everyone knows, the property tax is an important source of public school funding in virtually every state and locality. Not many of us are aware, however, of the connection between federal income tax policy, the property tax, and school finance. This article summarizes the results of a study commissioned by NEA Research that indicates that federal tax policy has a discernible effect on the distribution of the property tax burden between residential and business property.

Commercial and industrial real properties, essentially apartment and office buildings, warehouses, and factory buildings, have been important parts of the property tax base of urban areas ever since the Industrial Revolution. When business activities grow and business property becomes more valuable, its contribution to local public education budgets can be substantial as long as the measurement or valuation of such properties for state and local tax purposes keeps pace with economic reality. Because business properties are not sold as frequently as residential properties, however, their valuation is technically more difficult and prone to greater variation in estimation.

How the Federal Income Tax Affects Property Income and Value

Just as interest rates generally affect the value of all property, particular economic incentives through the federal tax system can have a material effect on the value of properties affected by such incentives. In the case of homes, periodic proposals to eliminate the

deductibility for homeowners of mortgage interest or local property taxes are generally criticized for making homeownership more expensive on an after-tax basis. The elimination of deductibility would depress the demand for owner-occupied housing in the future, with a corresponding depressing or decelerating effect on the prices of such property.

Were the prices of residential property to decline or grow more slowly than otherwise would be the case because of the elimination of federal deductibility of mortgage interest and/or local property taxes, it follows that property tax revenues would be ultimately depressed, or grow more slowly, once the assessment process captured this effect. Since reassessments in most jurisdictions are done periodically, rather than annually, it may take several years for the assessment process to capture this federally induced change in the prices of owner-occupied housing. Municipalities and school districts, in order to maintain their property tax revenues, would find they would have to raise their tax rate (millage) to compensate for a declining or more slowly growing tax base.

In the case of commercial and industrial properties, their value too can be affected by changes in federal tax law. Were owners of such property no longer allowed to deduct mortgage interest or property taxes associated with the properties, the effect on property values would parallel those just described for residences. Elimination of the mortgage interest and local property tax deductions for federal income tax purposes, while periodically discussed by the Congress, has not been seriously considered.

The manner in which commercial and industrial property can be depreciated for federal tax purposes, however, has changed materially over the past 15 years. This has directly and indirectly made them more valuable (and more recently less valuable) to individual investors. Since an annual depreciation charge is a cost of doing business, liberalization of this charge or deduction has the effect of reducing taxable income and increasing after-tax income from the property. This reduction in that property's taxable income is the direct effect of increasing depreciation deductions for business tax purposes.

Since depreciation allowed for tax purpose is often more generous than economic (or realistic) depreciation, the deductions may actually, for business tax purposes, create not just less income as measured for financial reporting purposes (and thus create less tax liability), but create negative taxable income or what is often called a "paper loss." Such tax losses have been historically allowed to offset other forms of business income and also carried to individual income tax returns to offset positive personal sources of income such as wages and salaries. Thus, liberalization of depreciation of commercial and industrial property can have indirect effects on the overall income of the property's owner(s). The decreased indirect taxable income from the property that results from more generous tax depreciation allowances or deductions will make such tax-favored assets more attractive to current and potential owners, and their prices will be bid up in the marketplace. In turn the assessment process will capture this increase in market value, and property



tax revenues, given fixed tax rates, will grow.

It should be noted that the extent of these direct and indirect effects on commercial and industrial property prices will not only reflect the first year effects of more favorable tax treatment, but, the effects of more favorable treatment over the life of the property. Also, relatively small changes in depreciation rules (favorable or unfavorable) will have large effects on market prices since the property market looks at the effects over the entire tax life of the asset. The market approach to estimating value in this case is to capitalize expected income, i.e., to compute the present value of an income stream extended over a period of time.

How Tax Depreciation Works

There are two principal ways in which depreciation has been liberalized for federal income tax purposes. First the time span over which the depreciation is allowed has been often shortened, so that more depreciation per year in the early years of the asset's life can be deducted. Second, the manner in which the annual depreciation charge is calculated has been changed, so that for an asset of a fixed tax life, relatively more depreciation can be deducted earlier.

The following arithmetic shows these two types of effects. The effect of shortening the time period over which depreciation can be calculated, or first effect, is as follows: Imagine an office building with a purchase price of \$20 million, and suppose that the income tax statutes allow the depreciation of the building over 20 years using the straight-line depreciation method. Thus, each year 1/20th of the price of the building (or 5% per year or \$1 million) can be deducted. Suppose that other costs of running the building are \$1 million and revenues from rents are \$3 million; the owner will have taxable

income of \$3 million - \$1 million of depreciation - \$1 million of other costs = \$1 million of taxable income.

Now, suppose that instead of depreciating the building over 20 years, the taxpayer can do so over 10 years. Now 1/10 of the price of the property can be deducted for income tax purposes or \$2 million per year. As a consequence of this change, there no longer is any taxable income. As a consequence of the property no longer having any taxable income, it will be a more attractive investment than others whose tax treatment has not changed.

The more favorable tax treatment could also have been accomplished by allowing the taxpayer to deduct twice the amount of depreciation allowable under straight line, but keeping the original 20-year tax life of the property; this would be an example of increasing the rate of depreciation each year from a 5% deduction to a 10% deduction.

This example is a simplification of the complexities of how tax depreciation is calculated, but shows the essential effects of liberalizing depreciation deductions. It should be emphasized that if tax depreciation deductions are made less generous than under current law, then the value of commercial and industrial real estate can decline, with attending effects on assessed values and property tax yields. Again, just as depreciation liberalization has direct effects on the return of income of the property in question and indirect effects on the personal income tax situation of the owner, there are ways to curtail the value of such depreciation deductions so that the taxable income from the property goes up, and the effects on the personal income tax return of the owner result in higher personal tax liabilities. As a consequence of these direct and indirect tax increases on the property's owner(s), the property will be less valuable than before and these income decreases for the owner(s) will drive down the value of the property in the

marketplace. Again, as the assessment process measures the new (depressed) value of the property, the assessed value of the property will decline and property taxes will fall.

Two other economic factors may affect the market price of commercial and industrial property: long-run demographics and the world competitive position of industrial properties whose products are in the world marketplace. Changing demographics such as a more slowly growing population, or in a regional context, the out-migration of population, can affect the demand for rental and residential property in obvious ways. In industries such as steel and automobiles, which no longer are able to set their market prices, their profitability may suffer a long-term decline. To the extent profits fall, their manufacturing facilities may become less valuable and fall in market value. Again, over time, the assessment process will capture the effects of weakening housing and industrial property markets, with the result that the property tax base will grow more slowly.

Residential vs. Nonresidential

Having explained generally how federal depreciation laws can affect the market value of commercial and industrial assets, it remains to ascertain how such changes affect the composition of the local property tax base. Simply put, unless homes and other realty (primarily agricultural real estate) are affected the same as commercial and industrial property, it is reasonable to expect changes in the relative importance of the market value of residential property vis-à-vis other types of local property. During periods when commercial and industrial property are "tax-favored" assets, we would expect that investors would generate more of them (build more new commercial and industrial properties) and they would become



relatively more important (and residential property relatively less important) in the local property tax base once this shift was recognized by the local assessment process. Conversely, when commercial and industrial property become less "tax-favored" assets, we would expect that investors would stop building new commercial and industrial properties, and their importance in the tax base would fall vis-à-vis other local properties once the shift was recognized by the local assessment process.

Changes in the Federal Income Tax Treatment of Real Property

Prior to 1934, federal income taxpayers were allowed to determine the useful lives of their depreciable assets without supervision of the Internal Revenue Service. Thereafter, taxpayers were required to assume the burden of proving the realism of useful lives which they chose. In 1942, Treasury issued an item by item listing of useful lives in Bulletin F, and in 1954 Congress enacted the 200% declining balance and sum of the year's digits methods of calculating depreciation; both were substantially more generous than straight-line depreciation. In 1962, the Bulletin F useful lives were liberalized with broad industry classes of assets. Taxpayers were allowed to document the reasonableness of their depreciation deduction through the use of the reserve ratio test, or on the basis of "all the facts and circumstances." In 1971, as taxpayers approached the fully phased-in effects of the reserve ratio test, the Treasury created the Asset Depreciation Range System of depreciation or ADR. It was originally limited to equipment and machinery, but broadened to potentially include buildings and non-residential real estate.

The useful life of buildings and industrial structures varied by industry under ADR and could be as long as 40

years for apartment buildings and 60 years for warehouses.¹

In 1981, federal depreciation tax law changed again with the adoption of the Accelerated Cost Recovery System (ACRS). ACRS simplified depreciation rules for various structures by providing a uniform useful life of 15 years for most buildings and allowing the use of the 170% declining balance method. By reducing the useful life of apartment and office buildings by a factor of 2.67 (40/15), Congress created a powerful incentive for the construction of new buildings. In 1984, the useful lives were increased to 18 years to reduce, somewhat, the explosion in depreciation deductions and the pass-through of resulting real estate losses to personal income tax returns.

In the Tax Reform Act of 1986, Congress made substantial changes in federal depreciation and related income tax law. It provided the modified accelerated cost recovery system (MACRS) and the passive loss rules. (The objective of these changes was to close "loopholes" and to have the reformed tax system produce no more nor less revenue than it had prior to reform.) Congress lengthened the useful lives again two years later: apartment buildings' useful lives were increased to 27.5 years, most other structures to 31.5 years or, in certain other cases, to 39 years. Also, Congress limited to \$25,000 the amount of losses that "passive" investors could use to offset positive income. Prior to this, passive investors faced no essential limitations on the amount of income losses in real estate that could be used to offset other, positive sources of income (e.g., wage and salary income) for federal personal income tax purposes. In 1993, the useful life of all non-residential real property was increased to 39 years.

¹ See Commerce Clearinghouse (1995).

Implications for a School District of a Changing Residential Property Tax Burden

Clearly, changes in federal depreciation policy can alter the composition of the local property tax base. Moreover, small changes in the composition of the property tax base can have large effects on the relative importance of residential property taxes and the burden of such taxes on family income.

To show this, we construct a hypothetical school district containing 2,000 students, roughly the median district size in the 1990s. The district is composed of 3,500 houses, each valued at \$100,000, which is close to the national median sales price of \$106,000 for an existing single family dwelling in 1993.² There are 100 office buildings with a market value of \$3,500,000 each, so the total market value of real estate in the district is \$700 million, and residential real estate represents 50% of the total market value of real estate. (See Table I.) For property tax assessment purposes, all property is valued at 100% of market value.

The local school board seeks to spend \$5,500 per student for operating and capital purposes; this is an above average school budget, but by no means exceptional for many school districts in the 1990s. With 2,000 students, this means the overall school budget to be financed is \$11.0 million. In this example, the state provides school aid via a foundation formula, the approach used in 38 states.³ The state assumes the local district imposes a minimum property tax millage of .005 against a per pupil guarantee of \$3,500. State aid to the hypothetical district is thus \$3.5

² See Table 1208: *1994 Statistical Abstract of the United States*. This price is above the sales price of single-family houses for the Midwest and South and below the sales price for single-family houses in the Northeast and West.

³ Gold, Smith, and Lawton (1995).



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Table 1: Effects of Shift for Hypothetical School District

	Initial Period	Number	Value	Total
1	Homes	3,500	\$100,000	\$350,000,000
2	Commercial Property	100	\$3,500,000	\$350,000,000
3	Total Market Value (MV)			\$700,000,000
4	Residential Share			50.0%
		Students	\$/Student	Total
5	Budget	2,000	\$5,500	\$11,000,000
6	State Aid	2,000 x \$3,500	- .005 x MV	\$7,000,000
			(\$3,500,000)	\$3,500,000
7	Property Tax			\$7,500,000
8	Millage (Tax/MV)		(line 7/line 3)	0.0107
9	Tax per House		(line 1 x 8)	\$1,071
10	Family Income		\$31,000	
11	House Tax/Family Income		\$1071/\$31,000	3.46%
	Five Years Later	Number	Value	Total
1a	Homes	3,500	\$115,927	\$405,745,926
2a	Commercial Property	100	\$3,500,000	\$350,000,000
3a	Total Market Value (MV)			\$755,745,926
4a	Residential Share			53.7%
		Students	\$/Student	Total
5a	Budget	2,000	\$6,376	\$12,752,015
6a	State Aid	2,000 x \$3,500	- .005 x MV	\$7,000,000
			(\$3,778,730)	\$3,221,270
7a	Property Tax			\$9,530,744
8a	Millage (Tax/MV)		(line 7a/line 3a)	0.0126
9a	Tax per House		(line 1a x 8a)	\$1,462
10a	Family Income		\$35,937	
11a	House Tax/\$Family Income		\$1,462/\$35,937	4.07%

million (See Row 6 of Table 1) To balance the budget of \$11.0 million, the district must impose \$7.5 million of property taxes (\$11.0 million budget - \$3.5 million in state aid). With a property tax base of \$700 million, millage must be .0107 (\$7.5 million in real estate taxes divided into the \$700 million real estate tax base.)⁴

With millage of .0107 and the market value of the representative house equal to \$100,000, the school property tax will be \$1,070 per house. The representative family in our hypothetical school district has an

⁴ N.B. Tax millage of .005 = 5 mills per \$1 of assessed value or 50 cents per \$100 of assessed value. Tax millage of .0107% = 10.7 mills per \$1 of assessed value or \$1.07 per \$100 of assessed value, or an effective property tax rate of 1.07% of market value.

income of \$31,000, which is about the national median family income in the 1990s, so the school property taxes of \$1,070 represent 3.46% of family income (\$1,070 / \$31,000), but only 1.07 % of the market value of the residence.

Now, assume that five years pass, that housing values rise by 3% per year, that commercial property does not change in value, and that the real estate assessment process captures these changes in value. Increasing house values and stagnant commercial property values are consistent with the federal tax law changes in the Tax Reform Act of 1986 (lengthening the useful life of properties for depreciation purposes as discussed above). The \$100,000 home rises in value to \$115,927. With residential values

rising, and constant commercial property values, the residential share of total market value will increase (See rows 1a through 4a of Table 1); compare 53.7% five years later to 50% in the initial period.

Also, assume that the local school district raises per pupil spending by the same amount, 3% per year; the new school budget is now \$12.752 million. Assume that the state does not increase its foundation amount of \$3,500 per year at all. Because market values continue to rise under this scenario, state aid will fall to \$3.221 million, and property taxes must now increase to \$9.531 million to balance the budget. Thus the school property tax must increase by 27% to balance the budget even though the school budget increased by only 15.9% over five years.



Table 2: Employment Shares by U.S. Industry: 1970-1990

Industry	% 1970	% 1980	% 1985	% 1990	% Change 1970-1990
Agriculture	4.4%	3.4%	3.0%	2.7%	-38.6%
Mining	0.7%	1.0%	0.9%	0.6%	-14.2%
Construction	6.1%	6.3%	6.5%	6.5%	6.6%
Manufacturing	26.4%	22.1%	19.5%	18.0%	-31.9%
Transport, Comm., Util.	6.8%	6.6%	7.0%	6.9%	2.0%
Wholesale trade	3.4%	3.9%	4.1%	3.9%	16.1%
Retail trade	15.7%	16.4%	16.8%	16.6%	6.1%
Finance, Ins., Real Est.	5.0%	6.0%	6.5%	6.8%	35.7%
Services	25.9%	29.0%	31.1%	33.1%	27.9%
Business & Repair	1.8%	3.9%	5.6%	6.3%	252.4%
Personal Services	5.4%	3.9%	4.1%	4.0%	-27.2%
Entertainment	0.9%	1.1%	1.2%	1.3%	39.9%
Hospitals	3.6%	4.1%	4.0%	4.0%	10.1%
Other Health	2.1%	3.4%	3.4%	4.0%	95.0%
Schools & Colleges	7.8%	7.7%	7.2%	7.3%	-6.4%
Social Services	1.1%	1.6%	1.6%	1.9%	80.0%
Legal Services	0.5%	0.8%	0.9%	1.0%	89.3%
Public Admin.	5.7%	5.4%	4.7%	4.8%	-16.4%
	100%	100%	100%	100%	

Source: *Statistical Abstract of the United States*

Further, assume that family income grows by 3% per year. Such relatively modest growth patterns lead to the remarkable result that the school property tax on the original house will be 36.6% higher than initially (\$1,462 / \$1,070). (See row 9a of Table 1.)

Further, even though family income grew at 3% per year to a new level of \$35,937, the new level of school property taxes is a higher fraction of family income than before: compare 4.07% to 3.46%, a 17.6% increase in tax burden. The effective tax rate has become 1.26% of market value.

It is relatively easy to see the effect of changing the assumptions underlying Table 1 to obtain further insights. For example, if commercial property values went up rather than residential property values, analogous to the period of the early 1980s, the results would be identical to those in Table 1 but opposite in direction. There would be disproportionately large reductions in residential real estate taxes and associated real estate tax burdens on

family income. If family income were not to rise by 3% per year as initially assumed, it is easy to see that the burden of the higher property taxes shown in Table 1 would rise dramatically from 3.46% to 4.72%; that is, consider \$1,462 / \$31,000 rather than \$1,462 / \$35,937. What we see from working through a specific numerical example is that stagnant state school aid, stagnant commercial and industrial real estate values, growing residential real estate values, and school budgets growing at the same rate as family income imply dramatically higher real estate taxes on homes and probably family income. In turn they also sow the seeds of political discontent with the school property tax.

The Shifting Composition of the Local Real Estate Tax Base

Manufacturing Companies

Two sorts of indirect empirical evidence suggest that manufacturing has become

relatively less important in the national economy in the last several decades: manufacturing's share of employment and manufacturing's share of profits worldwide and domestically. Table 2 shows that over the 20-year period 1970-90, manufacturing's share of national employment fell from 26.4% to 18%.

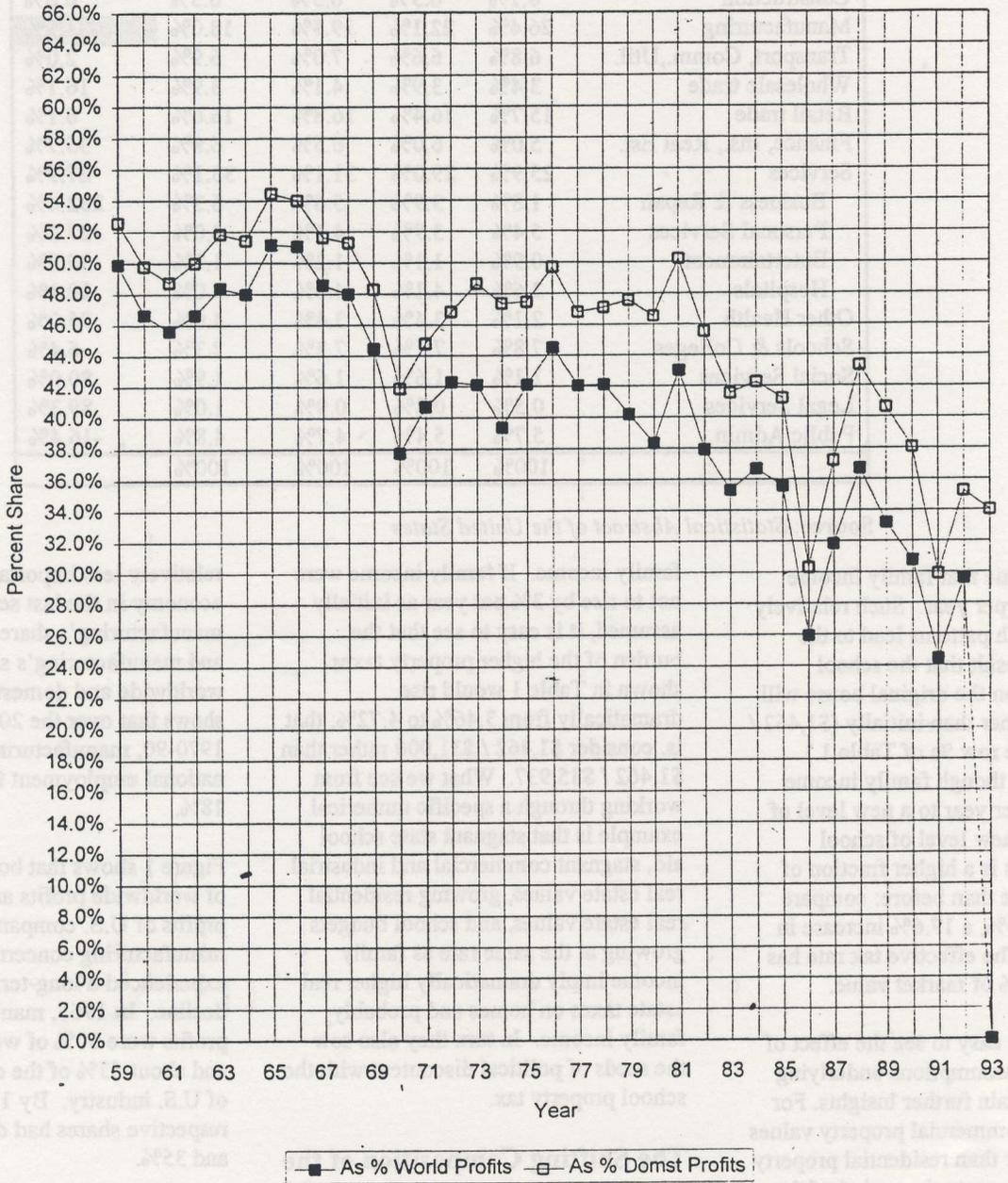
Figure 1 shows that both as a percentage of worldwide profits and domestic profits of U.S. companies, manufacturing concern profits have experienced a long-term relative decline. In 1965, manufacturing's profits were 50% of worldwide profits, and about 53% of the domestic profits of U.S. industry. By 1992, the respective shares had dropped to 30% and 35%.

To the extent that the market value of real estate used in manufacturing reflects the present value of profits from such activities, this decline in profit share should be associated with sluggish assessed values for manufacturing assets



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Figure 1. U.S. Manufacturing's Declining Share of Total U.S. Industry's World and Domestic Profits 1959-93

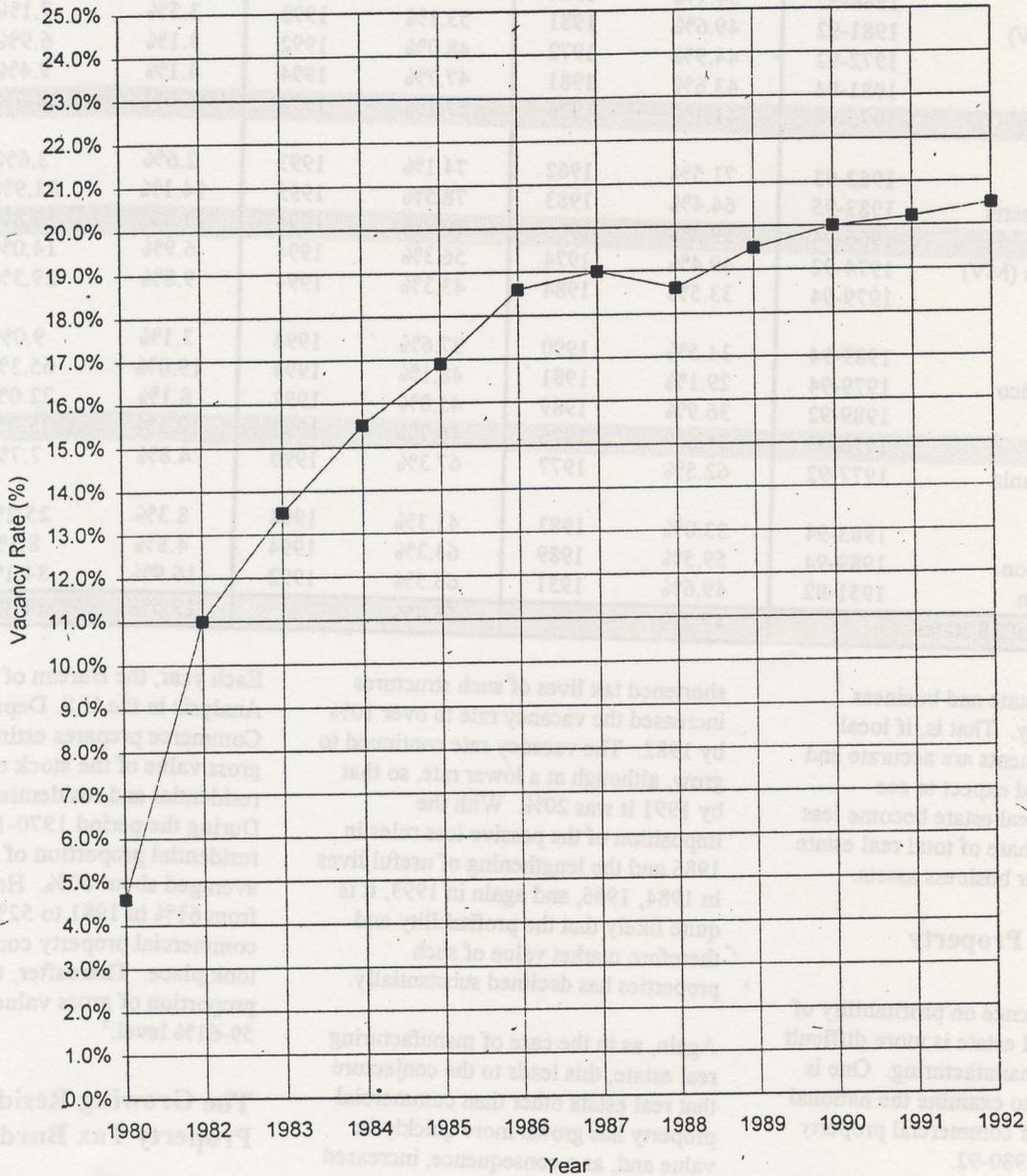


Source: 1994 Statistical Abstract of the United States



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Figure 2: National Office Vacancy Rates: 1980-92



Source: 1994 Statistical Abstract of the United States



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Table 3: Residential Property's Share of Total Assessed Value in 18 States

	Time Period of Data	Lowest Residential Share	Year of Lowest Share	Highest Residential Share	Year of Highest Share	% Points of Change	% Change in Res. Share
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Colorado	1984-95	54.1%	1984	70.8%	1995	16.7%	30.9%
Illinois (EV)	1981-92	49.6%	1981	53.1%	1992	3.5%	7.1%
Indiana	1972-92	44.9%	1972	48.0%	1992	3.1%	6.9%
Iowa	1981-94	43.6%	1981	47.7%	1994	4.1%	9.4%
Kansas	1976-94	41.1%	1976	57.1%	1994	16.0%	38.9%
Maryland	1962-93	71.5%	1962	74.1%	1993	2.6%	3.6%
Massachusetts	1983-95	64.4%	1983	78.5%	1995	14.1%	21.9%
Michigan	1966-94	59.2%	1966	70.9%	1994	11.7%	19.8%
Minnesota (MV)	1974-92	49.4%	1974	56.3%	1994	6.9%	14.0%
Missouri	1979-94	33.5%	1984	43.3%	1994	9.8%	29.3%
Nebraska	1989-94	34.5%	1990	37.6%	1994	3.1%	9.0%
New Mexico	1979-94	29.1%	1981	48.1%	1994	19.0%	65.3%
Nevada	1989-92	36.9%	1989	45.0%	1992	8.1%	22.0%
Oregon	1976-93	34.6%	1976	46.7%	1993	12.1%	35.0%
Pennsylvania	1977-92	62.5%	1977	67.3%	1990	4.8%	7.7%
Texas	1983-94	33.0%	1983	41.3%	1994	8.3%	25.2%
Washington	1989-94	59.5%	1989	64.3%	1994	4.8%	8.1%
Wisconsin	1951-92	49.6%	1951	66.5%	1992	16.9%	34.1%
Average of 18 states		47.2%		56.4%		19.5%	34.1%

including real estate and business personal property. That is, if local property assessments are accurate and timely, we would expect to see manufacturing real estate become less important as a share of total real estate values than other business assets.

Commercial Property

Long-term evidence on profitability of commercial real estate is more difficult to obtain than manufacturing. One is able, however, to examine the national vacancy rates of commercial property for the period 1980-92.

Figure 2 shows that before the 1981 Economic Recovery Tax Act, the market for office space was quite tight; only 5% was vacant nationally. The rise in office construction around the nation as a consequence of the

shortened tax lives of such structures increased the vacancy rate to over 10% by 1982. The vacancy rate continued to grow, although at a lower rate, so that by 1991 it was 20%. With the imposition of the passive loss rules in 1986 and the lengthening of useful lives in 1984, 1986, and again in 1993, it is quite likely that the profitability and therefore market value of such properties has declined substantially.

Again, as in the case of manufacturing real estate, this leads to the conjecture that real estate other than commercial property has grown more quickly in value and, as a consequence, increased the relative share of the local property tax of residential property.

Aggregate data on the gross value of private structures provide additional corroboration of the conjectured impact of federal depreciation law changes.

Each year, the Bureau of Economic Analysis in the U.S. Department of Commerce prepares estimates of the gross value of the stock of non-residential and residential structures. During the period 1970-1991, the residential proportion of such structures averaged about 60%. However, it fell from 61% in 1981 to 52% in 1982 as the commercial property construction boom took place. Thereafter, the residential proportion of gross value returned to the 59-61% level.⁵

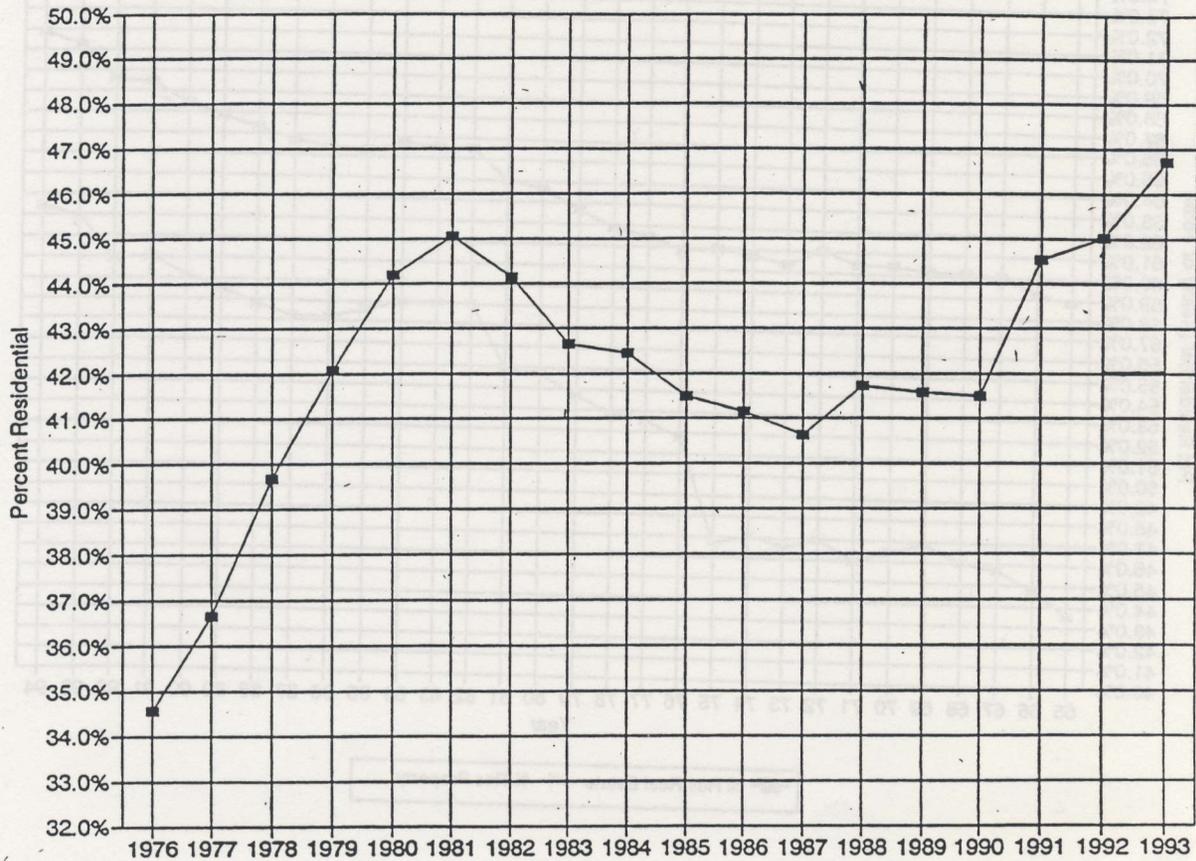
The Growing Residential Property Tax Burden

To examine direct evidence on the relative importance of residential property compared to other types of

⁵ *Survey of Current Business*, January 1992 and September 1993.



Figure 3. Oregon Percent Residential Actual Cash Value



Source: Legislative Revenue Office, Oregon Legislature

property among the states, one must turn to individual state agencies that collect and publish data on real property assessments.⁶ State agencies were contacted, and data obtained for as long a period as possible. Colorado, Illinois, Indiana, Iowa, Kansas, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Mexico, Oregon, Pennsylvania, Texas, Washington, and Wisconsin were able to supply data.

⁶ Where states impose property taxes on real estate and personal property, data on both were collected. Also, where states classify property and thus effectively tax residential and industrial property at different rates, data on assessed, taxable value and market value were obtained.

Table 3 summarizes survey results of the residential share of locally assessed value for the 18 states.⁷ The average of the 18 states lowest residential shares of property was 47.2%; the average highest percentage residential shares was 56.4%, or a 19.5% average relative increase.

⁷ Note that the figures for Illinois refer to equalized value, rather than assessed value, and the figures for Minnesota refer to estimated market value. Minnesota has pursued a policy over the years of taxing residential property less heavily, either by lower assessment ratios, or, more recently, through lower millages on residential property.

Kansas,⁸ despite its system of classification, displays a large increase in residential share: from 41.1% in 1976 to 57.1% in 1994. Perhaps in response to this shift, the Kansas General Assembly in 1996

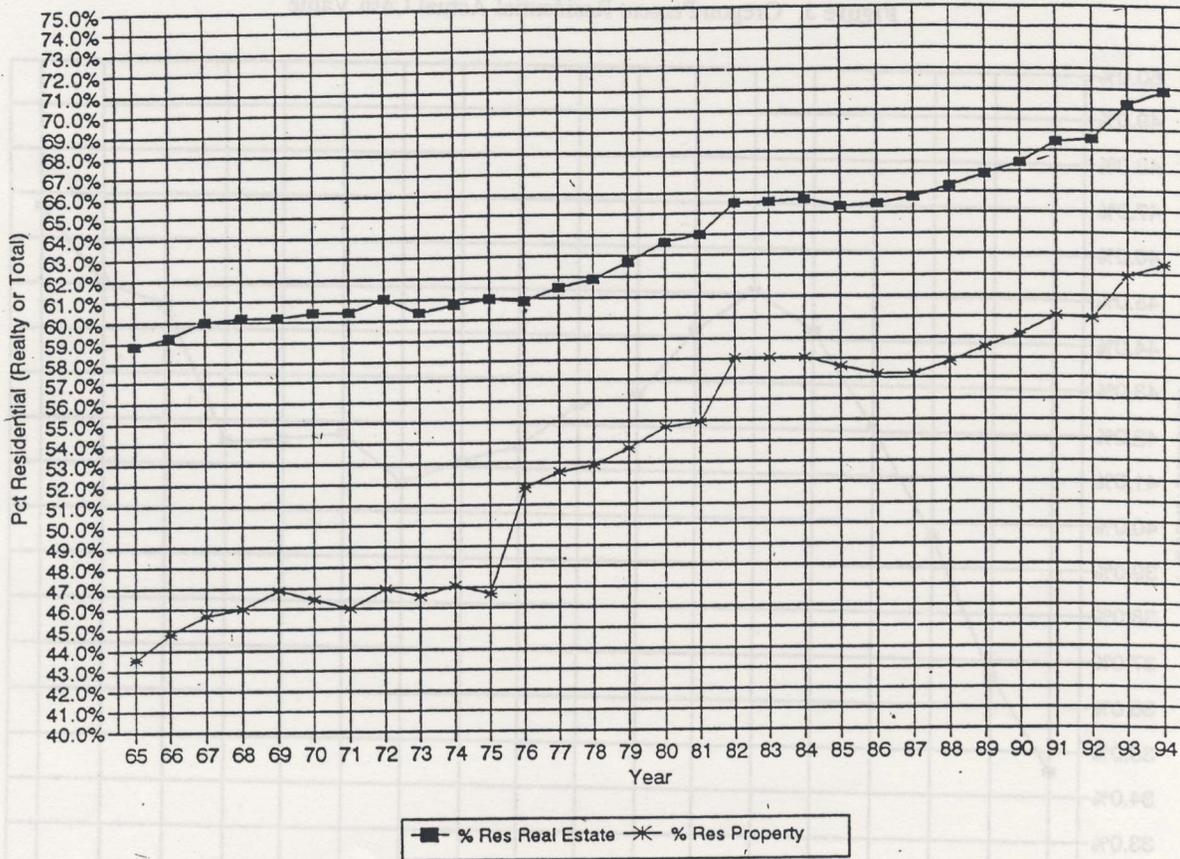
⁸ Data for Kansas reflect the differential rates of assessment that are part of their system of classification of real estate as reported to the Director of Property Valuation by the County Clerk. Residential real estate is assessed at 11.5% while agriculture is assessed at 30% and industrial and commercial property is assessed at 25% of market value.

Data for Colorado and Iowa, two other states which classify their property tax, reflect actual market values and values before mandatory roll-backs, respectively. Classification in Colorado substantially moderates the shift in market values, while the rollback percentages in Iowa are not as significant.



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Figure 4. Michigan Residential Percent Assessed Value: 1965-94



considered the elimination of the school property tax.⁹

It should be noted that the actually observed changes across the 18 states in the composition of the local property tax base are much larger than those contained in the hypothetical example in Table 1. Recall that in the hypothetical example above, residential property's share of assessed value rose from 50% to 53%, a 6% relative change. This rather modest shift was associated with very large changes on taxes per home. Many states, as shown in Table 3, experienced shifts of 10% to 20% and relative changes of 15% or more, which imply much larger changes in taxes per home and

property taxes as a fraction of household income.

Some states, notably Oregon and Michigan, have recently undergone very significant changes in the role of state aid to local school districts, and a substantial de-emphasis of the local school property tax. Fortunately for the purposes of this research, their data on the relationship between residential property and total property values is quite complete in terms of historical detail. As a consequence, we are able to trace through time the role of the residential property tax.

For Oregon, Figure 3 shows the fraction of net cash value attributable to the residential portion of the local property tax base for the period 1976-93. It is evident that it grew steadily until 1981, and then the effects of the

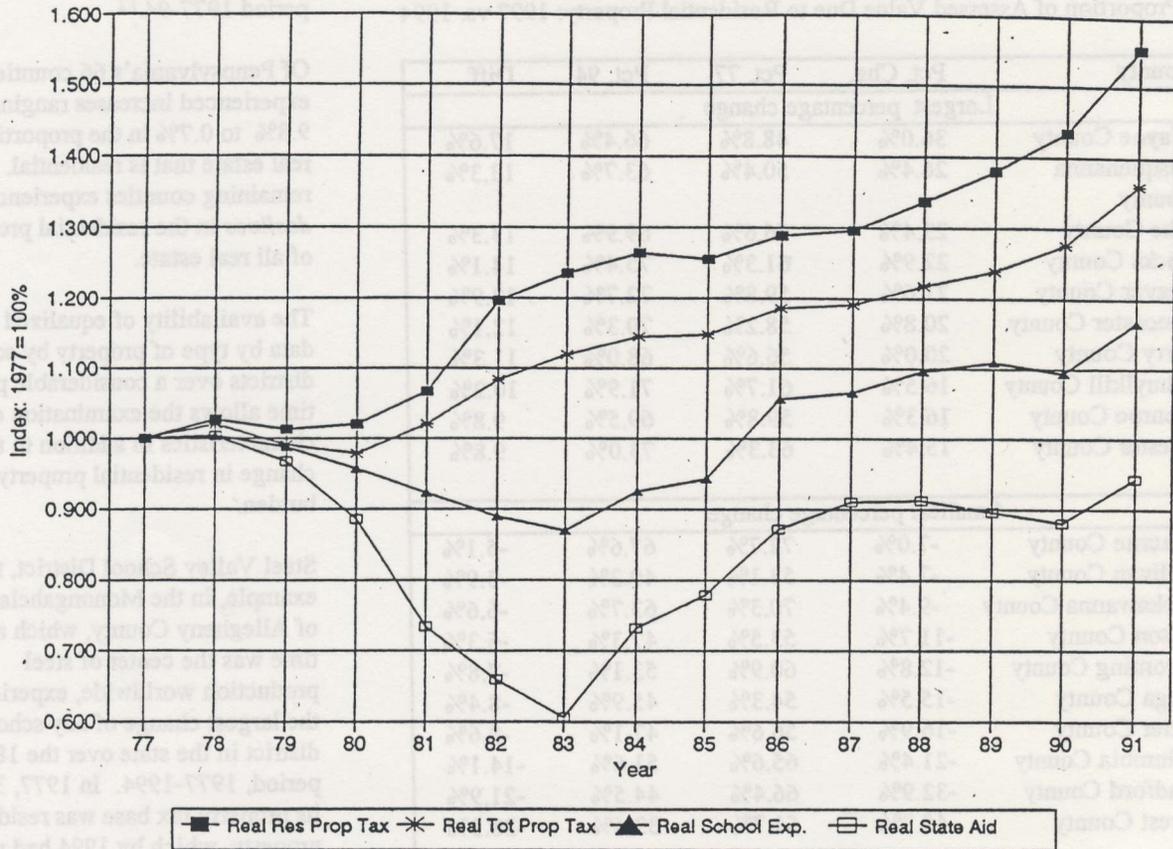
commercial and industrial property boom began to reduce the relative importance of residential real estate. The effect of the federal Tax Reform Act of 1986, however, is also evident. Note that between 1987 and 1988 the share of net cash value due to residential property began to climb, and reached close to 47% by 1993. Over the entire period, the residential property tax share grew from 34% of total net cash value to about 47%.

For Michigan, Figure 4 shows its share of residential assessed property over an even longer period: 1965-1994. Between 1965 and 1994 residential real estate grew from 59% of the total real estate tax base to 71%. Figure 4 also shows that the residential share of the overall assessed property base, including personal property, grew even more

⁹ As reported in *Education Week*.



Figure 5. Michigan and State Aid: 1977-91



Source: Michigan Department of Treasury, U.S. Bureau of the Census

dramatically. In 1964, the assessed value of residential property (real estate and personal property) was 43% of the total assessed value of property base, while in 1994 it was 62% of the total assessed property base.

Unlike in Oregon, the effect of the 1981 federal depreciation liberalizations in Michigan did not lead to a decline in the relative importance of the residential property base. Rather, it appears to have caused a plateau, which lasted until 1987 when the residential share of assessed real estate began to rise again.

Another way to examine fiscal changes over time, which provides

insights comparable to those contained in Table 1, is to examine fiscal aggregates in inflation-adjusted terms—in particular, total inflation-adjusted school residential real estate taxes, total inflation-adjusted school real property taxes (real estate + personal), total inflation-adjusted school spending, and inflation-adjusted state school aid for Michigan.

Figure 5 combines information contained in Figure 4 with Census data on aggregate school finances in Michigan for the period 1977-91. The base year chosen for the analysis is 1977. It is evident that inflation-adjusted state school aid dropped dramatically by 1983, to 60% of the 1977 level, and then grew to within 5

percentage points of the 1977 inflation-adjusted level by 1991. Inflation-adjusted total local school spending also declined, but not as dramatically, until 1983, with increases in real property taxes (real estate + personal) and even greater increases in real residential property taxes filling in the revenue gap.

While inflation-adjusted school spending grew by 16% between 1977 and 1991, inflation-adjusted residential property taxes (both real estate and personal property taxes) were 55% higher in 1991 than 1977. This massive shift reflects the accumulated loss of state aid in the 1980s and the relative shift between the residential and the non-residential property base shown in Figure 4.



Table 4: Pennsylvania Counties with the Largest and Smallest Percentage Change in Proportion of Assessed Value Due to Residential Property: 1977 vs. 1994

Rank	County	Pct. Chg.	Pct. 77	Pct. 94	Diff.
Largest percentage change					
1	Wayne County	36.0%	48.8%	66.4%	17.6%
2	Susquehanna County	26.4%	50.4%	63.7%	13.3%
3	Pike County	23.4%	56.6%	69.9%	13.3%
4	Bucks County	22.9%	61.3%	75.4%	14.1%
5	Beaver County	21.6%	59.8%	72.7%	12.9%
6	Lancaster County	20.8%	58.2%	70.3%	12.1%
7	Perry County	20.0%	56.6%	68.0%	11.3%
8	Schuylkill County	16.5%	61.7%	71.9%	10.2%
9	Monroe County	16.3%	59.8%	69.5%	9.8%
10	Chester County	15.4%	63.3%	73.0%	9.8%
Smallest percentage change					
57	Luzerne County	-7.0%	72.7%	67.6%	-5.1%
58	Sullivan County	-7.4%	53.1%	49.2%	-3.9%
59	Lackawanna County	-9.4%	70.3%	63.7%	-6.6%
60	Fulton County	-11.7%	53.5%	47.3%	-6.3%
61	Wyoming County	-12.8%	60.9%	53.1%	-7.8%
62	Tioga County	-15.5%	54.3%	45.9%	-8.4%
63	Potter County	-16.9%	56.6%	47.1%	-9.6%
64	Columbia County	-21.4%	65.6%	51.6%	-14.1%
65	Bradford County	-32.9%	66.4%	44.5%	-21.9%
66	Forest County	-45.9%	61.7%	33.4%	-28.3%

Source: Tabulations of unpublished Pennsylvania Equalization Board Data

While inflation-adjusted residential school property taxes were 55% higher in 1991 than in 1977, inflation-adjusted family income grew only marginally across this period. From 1984 to 1992, inflation-adjusted median family incomes in Michigan grew by only 4%.¹⁰ It is no surprise, therefore, that Michigan voters endorsed a far-reaching revamping of their system of local and state school finance.¹¹

¹⁰ 1994 Statistical Abstract of the United States.

¹¹ For a historical review of Michigan's movement away from the local property tax, see Kearney (1995).

Pennsylvania's and New York's Local Property Taxes

The availability of data on the composition of the real estate tax base in Pennsylvania in machine readable form allows us to disaggregate the Pennsylvania results to a very fine level of geography. At the county level, Table 4 shows what has happened to the composition of the real estate tax base in Pennsylvania between 1977 and 1994 and contrasts the counties with the largest shift to those with the smallest shift. For example, in Wayne County, between 1977 and 1994, the share of the assessed tax base attributable to residential property rose from 48.8% to 66.4%, a 36.6% relative increase.

This was the largest relative increase among Pennsylvania counties for the period 1977-94.¹²

Of Pennsylvania's 66 counties, 44 experienced increases ranging from 9.8% to 0.7% in the proportion of all real estate that is residential. The remaining counties experienced declines in the residential proportion of all real estate.

The availability of equalized value data by type of property by school districts over a considerable period of time allows the examination of other characteristics in addition to the change in residential property tax burden.

Steel Valley School District, for example, in the Monongahela Valley of Allegheny County, which at one time was the center of steel production worldwide, experienced the largest change of any school district in the state over the 18-year period, 1977-1994. In 1977, 36% of its property tax base was residential property, which by 1994 had risen to 82%. Its per capita taxable income was \$7,815 in 1989, well below the county average of \$11,501, and the percentage of school age children in families receiving AFDC was 19.5%, above the countywide average of 17.5%.

Clairton City, Aliquippa Borough, and Duquesne City all were home to major steel facilities until they were closed in the 1980s, and in each case the residential share of property tax base grew dramatically, by at least 70%. Again, the taxable per capita incomes are well below the countywide averages in each case, and the AFDC rates quite high. In Duquesne City, 54% of the children in school were from AFDC families.

¹² See Column "Pct Change" of Table 4.



Table 5: Effect of Rising Residential Property Share on Pennsylvania Per Pupil Instructional Spending in 1990

Explanatory Variable	Relative Effect	t-statistic
Constant	0.7883	1.18
1990 Residential %	-.3256	-9.29
1989 Per Capita Income	0.3447	6.52
1990 State Aid/Pupil	0.3250	8.10
1990 % Pop. with BA	0.0427	1.76
1990 % Pupils on AFDC	-.0342	-3.53
R ²	.2793	

Table 6: Effect of Rising Residential Property Share on New York Per Pupil Spending

Explanatory Variable	Relative Effect	t-statistic
Constant	-3.12	-8.9
Residential Property Value Per Weighted Student	0.48	26.1
Percent of Taxable Property Value That is Residential	-0.45	-22.0
Income Per Weighted Pupil	0.15	7.9
% of Students Receiving Subsidized Lunches	-0.04	-6.9
State Revenue Per Pupil	0.56	24.0
Federal Revenue Per Pupil	0.05	5.5
R ²	0.77	

The Effects of the Growing Residential Property Tax Burdens on Per Pupil School Spending in Pennsylvania and New York

Do observed changes in the composition of the local property tax base affect the ability or willingness of local school districts to support public education? As the property tax has increasingly become a tax on residential property, and as state and federal aid have decelerated, do homeowners react to having to carry, directly, a larger burden of local property tax increases?

To some extent this is a matter of political perception of the incidence of the local property tax, since local residents through higher prices pay at least some portion of the local business property tax. For example, in the case of property taxes levied on shopping malls, it is reasonable to expect that some portion of property tax increases on the malls, and their retail tenants, will be recovered through higher prices to consumers.

The question is whether there are differing levels of per pupil spending across school districts with differing compositions of the local property tax base. One would expect, holding constant state aid and the income and educational characteristics of a school district, that the higher the proportion of local property that is residential, the less that district will be willing to spend per pupil.

To examine this question, one needs not only information on per pupil spending by school district and the composition of the property tax base, but also on other factors that reasonably may be thought to affect the ability and willingness of local districts to support public education: per capita income, state aid per pupil, the fraction of students from poor



households, and the general educational background of the adult population (proxied for by the percentage of the population with a bachelor's degree or better). These data were assembled for 1989-90 from the records of the Pennsylvania Department of Education, Pennsylvania Department of Revenue, and the 1990 Census.

Table 5 displays the results of that statistical analysis for Pennsylvania, and Table 6 displays a similar analysis for New York school districts. The table entry under "t-statistic" should be interpreted as the confidence with which one interprets the estimated relative effect; a t-statistic greater than 1.96 suggests that we should accept the effect with 95% confidence. All the t-statistics with the exception of the percentage with BA degrees are extremely reliable, i.e., 99% or higher.

The table entry labeled "relative effect" should be interpreted as the percentage impact on per pupil spending of a 1% increase in each of these explanatory factors. Thus, a 1% increase in the share of the residential property tax base is associated with a .32% decline in per pupil spending in Pennsylvania. Higher state school aid per pupil has the same size effect but in the opposite direction: a 1% increase in per pupil state aid is associated with a +.32% increase in per pupil spending; a 1% increase in per-capita income is associated with a +.34% increase in per pupil spending.

A 1% increase in the fraction of the population with a bachelor's degree increases per pupil spending by only .04%. A 1% increase in the fraction of pupils from AFDC families decreases per pupil spending by .03%.

Ladd and Harris (1995) performed a similar analysis with 1991 data for New York State school districts.

Table 6 displays their results, which are remarkably similar, although somewhat larger, than those found for Pennsylvania. They estimate that a 1% increase in the percent of taxable property that is residential will reduce per pupil spending by .45% compared to .32% in Pennsylvania, while an increase in state aid for education will increase per pupil spending by .56% compared to .32% for Pennsylvania.

Conclusions and Implications for School Finance

The transformation in the nation's economy away from manufacturing and to services and the creation of intangible wealth coupled with radically changing federal tax treatment of commercial and industrial property has had strong implications for the composition of the local property tax base and the financing of public education. Since 1981, there is evidence from 18 states that the share of the residential real property tax fell with the boom set off by the 1981 federal depreciation liberalizations, and then rose systematically after they were curtailed and then eliminated in the Tax Reform Act of 1986. Residential property's share of assessed and taxable values has risen in the 18 states for which data could be obtained from a low of 3.1 percentage points in Indiana to 32.2 percentage points in Kansas.

Case studies in Pennsylvania and New York indicate that where the residential share of local assessed and taxable values is higher, per pupil spending tends to be lower. A 1% increase in residential property's share of overall assessed value is associated with a .3% to .4% decline in the willingness to support the local costs of public education, holding constant the income and poverty characteristics of a school district and holding constant the amount of per pupil state school aid. If the growing

relative pressure on residential property owners to finance local education persists, it is difficult to envision growth in the support for public education without policy adaptations to the sources of their complaints. The calculations in Table 1 remind us that the school taxes on a family's home depend on a variety of local, state, and national factors: (a) the initial composition of the local property tax base, (b) the efficacy of the local property tax assessment process, (c) the level of school enrollment and target level of per pupil spending, (d) the manner in which state equalizing aid is provided, and (e) the long-run effects of federal tax incentives or disincentives for the investment in long-lived business assets.

The combination of growing student enrollments, more heavily weighted by secondary students, who are inherently more expensive to educate, a desire by local school boards to increase per pupil spending by at least the cost of living, and stagnant state aid portend growing reliance on the local school property tax to balance local school budgets. Equally likely is the continued evolution of the nation's economy away from manufacturing and continued sluggishness in commercial and industrial property values. All of these factors will continue to increase for the next decade the share of local property taxes borne by residential property owners and continue to inflame arguments over the adequacy and nature of school finance.

Four policies deserve investigation as acceptable mechanisms to moderate the projected conflict between school boards and homeowners:

1. *Improving accuracy and frequency of property assessments to insure that commercial and industrial property are valued on a timely and accurate basis*



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2. *State assessment and taxation of commercial and industrial property and distribution of the proceeds back to local school districts as part of fiscal equalization formulas*¹³

3. *Reversing the long-term decline in state aid to education, and increasing the state role through higher state income and sales taxes, which would be used to supplement local property taxes*

4. *Diversification of the local school base away from the local school property tax to a combination of local property and nonproperty (local income or local sales) taxation.*¹⁴

Examples of such policies can be found among the states; however, no state has adopted all of them. Given the strong likelihood that the pressures on residential property will grow inexorably, it seems likely that supporters of public education will need to actively consider these approaches to school finance in order to achieve educational policy objectives.

The crucial lesson is that public school supporters dare not fail to alert Congress to the implications and perhaps unintended and unfavorable consequences for public education funding that federal tax policy changes have.

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¹³ For an analysis of the implications of this type of property tax reform in New York, see Ladd and Harris (1995).

¹⁴ For an elaboration on the rationale and impact of moving to the local income tax for local school finance, see Strauss (1993) and (1995).