Building-Tax Abatements:

An Approximation to Land Value Taxation

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ABSTRACT. As an *incentive* for *development, tax abatements* for new buildings may be similar to a graduated *tax system.* For macroeconomic reasons, this statement is especially true in the 1980s. Unlike a graduated tax system, however, tax abatements for businesses help to offset the pro-housing bias of the Federal *income tax.*

I

Introduction

TAXES ON LAND do not affect economic behavior, because the supply of land is fixed. By contrast, taxes on improvements, such as buildings, discourage their construction.[1] This distinction is one basis for Henry George's call for taxes only on land. Since George's time, the high cost of local government requires some tax on buildings as well as on land. As a result, the modern analogue of George's Single Tax is a graduated tax system, where tax rates are higher on land than on improvements.[2] The adoption of a graduated tax couples an increase in the tax rate on land with a permanent decrease in the tax rate on improvements.

While a permanent decrease in the tax rate on improvements is rare, temporary reductions in taxes on new buildings are common. A temporary reduction in taxes is called an *abatement.* Abatements are for varying time periods. The longer the abatement period is, the more closely an abatement resembles a permanently graduated tax. Many local governments provide tax abatements for new buildings, in order to encourage business development. This paper shows that such abatements are an increasingly close approximation to a permanent reduction of tax rates on buildings.[3]

The requirements for an abatement vary between states. Typically, however, abatements are awarded whenever requested, and most recipients are local firms (Wolkoff, 1985: 305–7).[4] Most abatements reduce or eliminate taxes on newly constructed buildings (and perhaps on equipment or inventories), but not on land or existing structures. Once granted, an abatement lasts for a specified

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period. This period varies between states but usually not within a state [Wolkoff, 1985:305].

In this paper, I consider abatements that are awarded to all eligible applicants and that apply only to new improvements. When abatements are awarded as a matter of right, there are few inequities between abated and non-abated improvements. There is also no discrimination between local and migrating firms.[5]

II

Illustrations of the Effect of Abatements

MY EXAMPLES of abatements are three types of improvements that are often eligible for abatements; namely, a plant rehabilitation, a new factory, and a new office building. For each type of project, I follow Gaffney (1964) in calculating the present value of future taxes. By doing this, I can summarize expected future taxes in one number. I compare the present value of non-abated taxes to the present value of taxes without an abatements program. I make this comparison for 1978 and 1988 in order to show the effect of changes in rates of interest and inflation. Finally, I compare abatements to a graduated tax.

For purposes of comparison, I estimate the present value of taxes for an effective tax rate of one per cent. I assume that the owner is a corporation that pays the statutory Federal income tax rate (34% in 1988). For 1988, the net cost of taxes on a building is \$1 times (1.0–.34), or \$0.66 per \$100 of its value. I assume that the building's owner expects inflation to raise a structure's market value and its assessment. However, the expected increase in market value will be less rapid than the rate of inflation, because the building will depreciate. Thus, a structure's expected assessment rises at the assumed rate of inflation rate minus the rate of depreciation (as a percentage of the remaining value of the building).

I make the following assumptions in order to illustrate the effect of a tax abatement:

1. The expected rate of inflation is the consensus one-year rate from Joseph A. Livingston's semi-annual survey of business economists (published in *Philadelphia Inquirer*).[6] In 1978, the expected rate of inflation was 6.20%. In 1988, it was 4.74%.
2. The discount rate which I need to calculate the present value of the tax abatement is one percentage point higher than the rate on commitments of commercial and multifamily mortgages, from the American Council of Life Insurance. The difference of one percentage point incorporates a risk premium. I assume that the required rate of return on the equity-financed portion exceeds

the mortgage rate by four percentage points. From data published by the American Council of Life Insurance, I also assume that all structures are mortgaged at 75% of their cost of construction (*i.e.,* a loan-to-value ratio of .75). The discount rate, then, is the weighted average of the mortgage rate and the higher rate required on the equity-financed portion. In 1988, for example, the mortgage rate is 9.70%, and the weighted-average discount rate is 10.70% (.75 times 9.70 plus .25 times 14.70).

3. I assume that the respective rates of depreciation are 5.394% for a plant rehab, 2.284% for a new factory, and 1.72% for an office building. These rates are higher than previous estimates. Taubman and Rasche (1969) estimate real depreciation rates on office buildings of 0.25% to 0.50% per year. Hulten and Wykoff (1973) estimate a rate of one to two per cent for industrial structures. But these estimates are for buildings still in use; they do not allow for possible declines in economic value that may result from shifts in demand. In other words, previous estimates of depreciation should be affected by survivorship bias. Today, we should also recognize that changes in communications technology cause office buildings to become obsolete more rapidly than in the past. Although my depreciation rates are arbitrary, I will show the effects of changing them by 0.5%.[7]

To estimate the present value of total taxes on any new building, one must estimate its expected economic life. I do so by doubling the number of years which represent the half-life of each type of improvement (the number of years until its real value will equal half its original cost).

Given the total revenue required, a lower tax on a new project requires a higher tax rate on other properties, *i.e.,* land and existing structures.[8] I assume that the existence of an abatements program lowers the tax base by one-half of one per cent for each year of taxes abated. For example, a program of 10-year abatements reduces the tax base by 5%, *ceteris paribus;*[9] if the tax base would have been $100 million without abatements, it becomes $95 million. To compensate, the effective tax rate on non-abated property must rise by the factor 100/95 for a program of ten-year abatements.

The illustrations appear in Table 1. The first five lines of each column are the assumptions for the given year and type of project. Line 6 gives the present value of all taxes during the building's service life in the absence of an abatement (per $100 of value, at an effective tax rate of 1.00%). For example, in 1978 the first year's net tax is $0.54 for each $100 of the cost of the plant rehabilitation. The present value of 25 years of taxes on this project is $8.05 in 1978 if the tax is 1% of the market value. If the effective tax rate is 2% of market value, multiply $8.05 by 2. Lines 7–9 show the present value of expected taxes during the

Table 1

Present Value of Taxes Per $100 of Original Cost
(For Effective Tax Rate of 1%)

	Plant Rehab		New Factory		Office Building	
	1978	1988	1978	1988	1978	1988
1. Discount Rate (%)	10.09	10.20	10.09	10.20	10.09	10.20
2. Expected inflation	6.20%	4.74	6.20	4.74	6.20	4.74
3. Depreciation (%)	5.394	5.394	2.284	2.284	1.72	1.72
4. Federal tax rate	.46	.34	.46	.34	.46	.34
5. Service life (yrs.)	25	25	60	60	80	80
Present Value of Taxes:						
6. No abatement	$8.05	7.76	19.97	14.11	27.46	16.50
7. 5-yr. abatement	5.74	5.03	17.81	11.37	25.47	13.79
8. 10-yr. abatement	3.85	3.09	15.77	9.12	23.54	11.50
9. 15-yr. abatement	2.31	1.71	13.85	7.27	21.66	9.58
Relative Reduction in Present Value of Taxes:						
10. 5-yr. abatement	.288	.352	.108	.194	.073	.164
11. 10-yr. abatement	.522	.602	.210	.354	.143	.303
12. 15-yr. abatement	.713	.780	.307	.485	.211	.420
ALTERNATIVE SOLUTION: Relative reduction in taxes if interest rate or depreciation is .5% higher or inflation is .5% lower:						
13. 5-yr. abatement	.294	.359	.116	.205	.081	.176
14. 10-yr. abatement	.530	.611	.224	.370	.158	.322
15. 15-yr. abatement	.720	.787	.324	.504	.231	.443

NOTES:
1. Discount Rate: Commercial mortgage rate from ACLI plus a risk premium of one percentage point.
2. Expected inflation: one-year expected rate from Livington survey.
3. Depreciation: see text.
4. Federal tax rate: statutory tax rate for corporations.
5. Service life: see text.

Effective property tax rates:
No abatement: 1.0000%
5-yr. abatement: 1.0256%
10-yr. abatement: 1.0526%
15-yr. abatement: 1.0811%

building's economic life, for abatements of 5 years, 10 years, and 15 years.[10] For example, the effective tax rate after a five-year abatement ends is 1% times the factor (100/97.5), or 1.0256% of the prevailing market price, and the present value of the last 20 years of taxes on a plant rehab is $5.74 (in 1978). With an abatement, the effective tax rate becomes 1% times the factor of (100/97.5), or 1.0256% of the prevailing market value.

Lines 10–12 in any column show the relative reduction in the present value of taxes. For example, the ratio of $5.74 to $8.05 is .712, so the relative reduction in taxes is one minus .712, or .288. Naturally, a longer abatement saves more taxes. However, the effect of abating more years of tax is partly offset by the higher tax rate needed to raise a given amount of revenue.

The "Alternative Solution" (lines 13–15 of Table 1) shows the effects of abatements for an increase of one-half of one percent in the discount rate or depreciation rate, or a reduction of 0.5% in the inflation rate. Such a change might result from risk or from service fees on mortgages. This higher adjusted discount rate increases the value of any abatement (*i.e.,* the present value of remaining taxes falls). Conversely, a lower depreciation rate, a lower interest rate, a higher expected inflation rate, or an expected increase in the property-tax rate would decrease the present value of an abatement.

Now, compare the 1978 and 1988 figures for any building and length of abatement. For the original assumptions (as opposed to the "Alternative Solution"), a five-year abatement on a plant rehabilitation reduces the present value of net property taxes by the factor of .352 in 1988, compared with only .288 in 1978. For every abatement period and project, the present value of taxes is lower in 1988 than it was in 1978.

Between 1978 and 1988, two major changes affected the present value of property taxes. First, the Federal income tax rate fell, thereby raising the net cost of each dollar paid in property taxes from 54 cents to 66 cents. Second, real interest rates rose (Hoelscher, 1986; Wilcox, 1983). The relative reduction in taxes (lines 10–12) is larger in 1988 than it was in 1978, indicating that the increase in real interest rates more than offset the effect of the lower Federal income tax rate. High real interest rates reduce the present value of far-distant taxes. Despite lower Federal income tax rates, then, the increase in real interest rates in the 1980s caused abatements to be a closer substitute for the permanent reduction of taxes on improvements that is inherent in graduated taxes. This comparison is especially striking for long-lived property. In the extreme case, a 15-year abatement on an office building reduces the tax burden by about twice as much in 1988 as in 1978 (*i.e.,* by a factor of .420 in 1988, compared to .211 in 1978).[11]

III

Comparison of Abatements and Graduated Taxes

TWO PREVIOUS STUDIES allow a comparison of abatements with graduated taxes. For the Boston area, DiMasi (1987) simulates a change to a 3:1 graduated tax

system (with the rate on land three times as high as that on improvements), where virtually all land rents go to the tax collector. He finds that the tax base of industrial capital rises by 2.84% (in addition to other effects), and concludes that "the potential benefit from discriminating for tax purposes against land relative to capital is significant." (DiMasi, 1987:588).

For Detroit, Wolkoff (1985:311) finds that "abatement should increase capital investment by 2 per cent." Arguing for project-by-project discretion, he concludes that "property tax abatements alone are unlikely to have a major effect on capital investment."

The quantitative results of these two studies are of the same order of magnitude (2.84% versus 2%). Together, they suggest that tax abatements on industrial property may be as effective as a graduated tax system in stimulating development (even if neither is as effective as an ideal targeting of marginal projects).

In fact, abatements may be a more powerful stimulant to industrial development than a graduated tax. DiMasi (1987:584–5) finds that a graduated tax reduces the effective tax rate on industrial buildings by less than nine per cent. By comparison, abatements of ten years or more lower the present value of taxes by at least 16.4% in 1988 (Table I, lines 11–12).

Abatements can provide a sharp reduction in the tax burden because abatements programs focus on business, and at the margin. The focus on business is important because businesses pay income tax in addition to property tax. By contrast, services of owner-occupied homes are exempt from income taxes. In addition, property tax rates and/or assessment ratios may be higher for business than for households; see Bovenberg (1989) and Musgrave and Musgrave (1989: 422 and 417). Given these imperfections in income taxes and in property taxes, abatements on business property may be a reasonable second-best; see Ladd (1973).[12] Tax abatements focus on the margin, thereby promoting capital formation. By contrast, a graduated tax system applies to existing as well as new improvements. As older buildings come onto the tax rolls after their period of abatement, their owners have even more incentive (or lack of disincentive) for further development than they would under a graduated tax system.

IV

Conclusions

In summary, nondiscriminatory tax abatements are similar to a graduated tax system as an incentive for business development.[13] This statement is especially true in the last decade, because rising real interest rates have reduced the importance of taxes to be paid after an abatement ends. Limiting eligibility for an abatement to business construction also helps to offset the bias toward housing

that is inherent in Federal and state income taxes. Finally, abatement programs are politically acceptable, as is evidenced by the fact that they exist in about two-thirds of the states—far more than those which permit graduated taxes.

Notes

1. DiMasi (1987) surveys the relevant literature. Brueckner (1986) shows that land value taxation is neutral as long as the tax rate is the same for all uses. Two qualifications are wealth effects (Feldstein, 1977) and risk (Eckert, 1983).

2. Graduated taxes are now in used in Australia, New Zealand, South Africa, western Canada, and fifteen cities of Pennsylvania (Netzer, pp. 202–212).

3. As an example of tax abatements, a local government in Michigan can create a commercial redevelopment district (Public Act 225, 1974) and a plant rehabilitation or industrial development district (Public Act 198, 1974). Such districts provide exemptions of new construction or rehabilitation; for up to 12 years the owner pays the full tax on the land and existing improvements, and half of the normal tax on new improvements. As many as 34 states have similar laws (National Association of State Development Agencies, 1983); Wolkoff (1985:305) identifies 31 such states.

4. Although he argues for discretion in granting abatements (to maximize business development), Wolkoff (1985:314) recognizes "the opportunity for negotiated abuses and the level of analysis required."

5. Awarding abatements as a matter of right also avoids the question of whether they attract migrating firms. Many studies cast doubt on the effectiveness of local incentives for attracting or retaining business; see Morse and Farmer (1986) and Kieschnick (1981). According to the Joint Economic Committee (1979), abatements are unlikely to affect location decisions of firms that plan to invest in any event. Even relocations that do occur in response to abatements impose economically and psychologically costly disruptions on business operations and on employees and their families.

6. Source: Federal Reserve Bank of Philadelphia. We use the expectation from the survey conducted in May. For an analysis of these data, see Carlson (1976). Although the relevant expectations are for periods longer than one year, there is little difference between the one-year expectation and that for a longer period. For November of 1978, for example, the Livingston expectation for six months is 6.498%, compared to 7.096% for 12 months. In an irregular poll conducted by Richard Hoey of Becker Paribas, the ten-year expectation was 6.20% in Sept. 1978.

7. In the calculations, I convert all percentage rates to their continuously-compounded equivalents, as required when adding or subtracting rates. I then convert the net of the three rates back to an effective annual rate (*i.e.,* with annual compounding), and calculate the present value of an annuity in advance (because property taxes are typically paid at the beginning of a year).

8. If the new facility will be built even without an abatement, revenue will be lower with an abatement than without. If the facility will be built only with an abatement, any municipal costs of servicing it raise the total revenue required. In either case, the abatement ultimately forces the effective tax rate to rise.

9. In Detroit (Goldsberry, 1989), for example, the mean abatement in the first five years of the program was 0.72% of the city's total property-tax revenue. The net loss of revenue, however, was lower, because some of the abated improvements would not have been made without abatements, some improvements generate revenue from other taxes, and development may spur non-abated projects (*e.g.,* housing). On the other hand, the cost of servicing facilities that were built only because of abatements raises a city's revenue requirement.

10. If only a fraction of taxes is abated (*e.g.*, .5 in Michigan), the present value of taxes on a project is a weighted average of the present value of total taxes (line 6) and the present value of taxes with an abatement (line 7, 8, or 9).

11. The present value of an abatement of a given length (*e.g.*, 5 years) is not comparable across types of buildings, because a shorter-lived project may be replaced within the lifespan of a longer one. The possibility of such a "replacement chain," however, does not affect the comparison between an abatement (at higher millage) and unabated taxes (at the current millage), because the same service life is used for both.

12. Baum (1987, p. 352) argues that ". . . tax subsidy plans in many communities both create inefficiency and transfer purchasing power from the immobile factor to the mobile factor." Nondiscriminatory abatements, however, are less likely to create inefficiency than are discretionary abatements. In addition, the basis of Baum's inefficiency argument is that abatements cause the "export" sector to be taxed at a lower rate than is the local sector. If the local good is housing, it is already tax advantaged (via the Federal income tax). In that case, abatements are a second-best way to offset the transfer of purchasing power from the mobile factor to the immobile factor.

13. Any offer of low-priced land by a local government is quite another matter. To the extent that such a concession reduces the present value of land taxes and has a price effect (rather than being merely a lump-sum transfer), the effect is the opposite of graduated taxes.

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Savers—*(Continued from p. 236)*

and the well-being of its inhabitants, is in the hands of other people than the person who decided to limit his consumption spending. These are the people who now hold the funds provided by the "saver." This first decision is essentially deflationary since it reduces the demand for goods and labor.

These other people include members of the financial and business community. If they use the funds to build new houses and new factories, or to expand or re-equip old ones, or to build up inventories, more things will be produced, the economy will expand, jobs will be created and employment sustained. The economy may become more productive, sales might expand, exports might rise. The general business motive is clear, "If sales are good, keep up production, perhaps even increase it. But if unsold goods are accumulating, decrease employment."

The vital point is that saving in an economy is a residual from production minus consumption. It is the production of goods that are not consumed, and thus remain as increases in inventories, or as capital goods that are comprised of new machines, factories, and housing. The American public's saving practices are rather peripheral to movements in the economy as compared to the significance of the actions of its real movers.

An investor who gives the public something new to buy, such as a compact disk player or a camcorder, has a great deal to do with the ordinary American's choice as whether to consume or to save. That the products mentioned are imported will not have escaped the notice of the perceptive reader. At least part of the reason for these imports is inadequate investment in the past by business leaders, rather than inadequate saving by the public.

There is one final actor in this matter which it would be wrong to omit, and that is the government. Insofar as any government (federal, state and local) runs a deficit budget, it becomes an additional seeker of funds from our "savers" and thus tends to push interest rates up and, perhaps, deters other seekers of