



No relief: Tax prices and property tax burdens[☆]

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ABSTRACT

In 2001 the state of Minnesota reduced the weights assigned to non-residential property in local property tax bases, which increased residents' price of raising property tax revenue and affords the opportunity to identify the tax price elasticity of local tax revenues and expenditures. Results suggest that a one percent increase in residents' tax prices is associated with a one percent decrease in per-resident property tax revenues as well as a substantial reduction in capital expenditures. The unit price elasticity of property tax revenues suggests that popular tax relief programs that reduce residents' tax prices – homestead exemptions – do not reduce homeowners' tax payments.

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This paper estimates an important parameter in local public finance – the tax price elasticity of local government revenues and expenditures – using a policy innovation in Minnesota that creates large and unanticipated within-city changes in property tax base composition. The policy innovation alters the definition of local tax base, decreasing the share of commercial–industrial property in the tax base and thus increasing the share of city property taxes paid by residential property owners. An individual property owner's tax price of property tax revenue is equal to the incremental tax the individual must pay in order to increase total property tax revenue by one dollar. Thus, the policy change increased the tax prices of residential taxpayers by increasing their share of the tax burden and decreased the tax prices of commercial–industrial taxpayers by decreasing their share of the tax burden. The exogenous tax price variation created by the policy change allows regressions to produce precise causal estimates of the tax price elasticity of tax revenues and expenditures. Regression results demonstrate that the tax price elasticity of property tax revenues is approximately negative one, which implies that a one percent increase in tax price is offset by a one percent decrease in total property tax revenues. The regression results also suggest that capital expenditures are responsive to tax price changes, while current expenditures are not.

The focus of this paper is the estimation of the tax price elasticity of property tax revenues. The vast majority of prior work estimates only the tax price elasticity of expenditures. Focusing on the response of property tax revenues to tax price changes is important in and of itself because the tax price elasticity of property tax revenue provides direct evidence on the effectiveness of state and federal government programs purported to provide property tax relief via tax price reductions.

The most widespread program purported to provide tax relief to homeowners is the homestead exemption. All 50 states offer property tax exemptions available exclusively to some or all homeowners.¹ Most homestead exemptions reduce homeowners' tax prices by altering the composition of the property tax base. Other popular programs also reduce tax prices for a subset of taxpayers, including matching grants from state and federal governments, revenue sharing, assessment limitations, and the deductibility of property taxes on federal income taxes.

Estimating the tax price elasticity of property tax revenues is important because the behavioral responses of policy makers and residents to reduced tax prices could result in either lower or higher property tax burdens. Behavioral responses to reduced tax prices produce one of three broad outcomes for residents: pay less in taxes but maintain the same expenditures; pay the same in taxes and increase expenditures a little; or pay more in taxes and increase expenditures by a lot. The tax price elasticity estimates presented in this paper provide valuable insight into the impact of all of these

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¹ Most homestead exemption programs are available without regard to income. Twenty-eight states make the exemptions available to all homeowners, rather than only a subset of homeowners (e.g., seniors, veterans, low income). See Baer (1998) and Baer (2003).

programs on local governments and local taxpayers. For example, President George W. Bush's Advisory Panel on Federal Tax Reform proposed eliminating the federal tax deduction for local taxes – a policy which would significantly increase local residents' tax prices across the US. The lack of any variation in local tax deductibility (it applies throughout the US) makes it extremely difficult to directly estimate the impact of such a change. The estimates in this paper, however, can be used to assess the impact of the proposed change.

Despite the prevalence of homestead exemptions, virtually nothing is known about their effects on property tax burdens and local public expenditures. Previous work has focused on estimating the tax price elasticity of expenditures. These estimates, however, are likely biased because of the endogenous tax price variation in cross-sectional data. Panel data – by controlling for between-city differences in unobservables like local preferences and costs – provide the opportunity to eliminate the bias inherent in cross-sectional estimates.² Yet researchers hoping to identify the tax price elasticity via the within-city tax price variation observed in panel data have been stymied by two important problems: that within-city changes in tax prices are too small to produce precise estimates and that any observed within-city changes in tax prices are likely endogenous.

The Minnesota policy change overcomes these two problems because it produced large, unanticipated, and arguably exogenous within-city changes in tax prices. The tax price elasticity estimates derived from this natural experiment imply that, because of the behavioral response of local governments, homestead exemptions provide no tax relief; instead the tax price reductions produce, on average, identical residential tax bills, increased property tax revenue, and increased public expenditures.

Further, one of the primary causes of between-city differences in resident's tax prices is between-city differences in the composition of the property tax base caused by the non-uniform distribution of non-residential property across cities. Because Minnesota's policy change alters the composition of the property tax base, the estimates can also be used to produce unbiased estimates of the effects of the between-city distribution of non-residential property on local revenues and expenditures.

Two other recent papers also estimate tax price elasticities of demand using panel data along with arguably exogenous changes in voters' tax prices. First, [Anderson \(2006\)](#) examines city revenues and expenditures and, like this current paper, uses variation in the composition of the property tax base to identify price elasticities of revenues and expenditures. The within-city variation in tax prices in [Anderson \(2006\)](#), however, is a result of changes in the taxation of vacation homes, which limits its external validity because relatively few jurisdictions have a significant concentration of vacation homes and those jurisdictions are fundamentally different from other jurisdictions. In Minnesota only 1 in 20 cities derives more than two percent of their property tax base from vacation homes. Cities with at least 2% of their tax base in vacation homes are much smaller than other cities – none have population greater than 7500 – and they have very high levels of per capita public expenditures – on average 50% higher – than other cities. In contrast, this paper's results are widely applicable because it uses changes in the taxation of commercial-industrial property, whose presence is ubiquitous across cities. In

Minnesota, more than 90% of cities have at least 10% of their property tax base derived from commercial-industrial property.³

Second, [Rockoff, 2010](#) uses New York state administrative panel data to examine school districts' current expenditures and estimates a tax price elasticity of current school district expenditures of approximately -0.18 , which is in line with previous estimates. A state-funded homestead exemption program in New York (NYSTAR) creates within-school district variation in residents' tax prices. The main effect of funded programs like NYSTAR is to change the tax prices of residential properties; because it is state-funded NYSTAR does not change the tax prices of those who do not receive the exemption (e.g., commercial-industrial property owners).⁴ Only 15 states have homestead exemptions similar to New York's. Homestead exemptions in the other 35 states are not funded and thus they change homeowners' tax prices by changing the tax prices of non-homeowners. As noted above, the policy change in Minnesota resembles the typical homestead exemption policy because it also shifts the marginal tax burden across property types. This makes the results here widely applicable.

Finally, this paper estimates the tax price elasticity of cities' decisions on revenues and expenditures, rather than school districts or townships, because in Minnesota cities are the most numerous type of fiscally independent local government with substantial populations.⁵ Strong restrictions on school districts' access to property tax base makes them unsuitable for an analysis of local governments' response to changes in tax prices because any response is mechanical rather than behavioral. Property taxes are the main independent source of financing cities' expenditures and cities enjoy relatively broad access to their property tax base and thus their governments have a large amount of leeway in making decisions on revenue and expenditure. Estimation using city governments is widely applicable since these governments are widespread across the United States.

1. Tax prices and local revenues and expenditures

Property tax revenue in city j equals the product of the tax rate (τ) and the total tax base (B) plus any matching grant revenue from the state,

$$R_{jt} = \tau_{jt}B_{jt} + \psi_{jt}\tau_{jt}B_{jt}, \quad (1)$$

where $\psi_{jt} \in [0, 1]$ is the matching rate from the state government. Unlike sales and income taxes, the property tax base is known by policy makers ex ante, so the city's uniform property tax rate falls out as the ratio of the city's desired revenues to the city's total tax base. Because a city government's decision variable is its revenue request, in practice the tax rates implied by these revenue requests change almost every year. As [Bogart and Bradford \(1990\)](#) emphasize, the relative ease and flexibility of setting property tax revenues means that property tax revenues finance marginal public expenditures because they can be set to cover the difference between desired expenditures and the less easily manipulable non-property tax revenues.

When property taxes finance cities' marginal changes in expenditure, a resident's tax price reflects the cost of raising additional per-resident property tax revenues and the cost of additional public expenditures. It can be shown, via an accounting identity, that the five

² The dependent variable in these studies is most often expenditure on a particular service or group of services such as education ([Feldstein, 1975](#); [Ladd, 1975](#)), and general expenditures, police, and parks and recreation ([Bergstrom and Goodman, 1973](#)). [Feldstein and Metcalf \(1987\)](#) examine the effects of federal tax deductibility on revenues and [Holtz-Eakin and Rosen \(1990\)](#), using panel data, examine the effects of federal deductibility on local property tax rates. [Inman \(1989\)](#) examines residential tax shares and property tax revenues and is an additional example a panel study. [Inman \(1979\)](#) reviews community level studies and [Rubinfeld \(1987\)](#) reviews studies using individual level data. For a review of studies outside of the United States and a discussion of various methods of identifying the decisive voter, see [Ross and Yinger \(1999\)](#).

³ For cities in Minnesota, commercial-industrial property represents about one-quarter of the tax base for the average city and nearly 60% of all non-homestead property. Vacation homes represent on average less than 1% of cities' property tax base and only approximately 3% of the total housing stock in the United States (U.S. census 2000).

⁴ For details on the STAR school district exemption in New York, which does not reduce local tax base, see *The Municipal Tax Base: A guide for local officials*, NYS Office of Real Property Services, March 2008.

⁵ The majority of townships with population less than 500 have very small and volatile tax revenues and expenditures, making it difficult to produce precise estimates.

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