The Impact and Inefficiency of the Corporate Income Tax: Evidence from State Organizational Form Data

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Abstract

By double taxing the income of corporate firms but not unincorporated firms, taxes can play an important role in a firm's choice of organizational form. The sensitivity of the organizational form decision to tax rates can also be used to approximate the efficiency cost of the corporate income tax. This paper uses new cross-sectional data on organizational form across states compiled in the Census of Retail Trade to estimate this sensitivity. The results document a significant impact of the relative taxation of corporate to personal income on the share of economic activity that is done by corporations including sales, employment, and the number of firms. The impacts are substantially larger than those found in the previous empirical literature based on time-series data.

1. Introduction

The corporate income tax generates a distortion by double taxing corporate income. In other words, corporations typically pay income tax on income earned at the corporate level and then shareholders pay personal income tax upon the income when it is distributed to them. The fact that the taxation of corporate income generally exceeds that of personal income raises the question of how distortionary the corporate income tax is—the magnitude of the deadweight loss (DWL) of the corporate income tax.

The issue is central to standard work on the subject such as Harberger (1966), Shoven (1976) or Ballard et al. (1985). In these models, some sectors (e.g., manufacturing) are assumed to be corporate sectors and other sectors to be non-corporate. A tax on the corporate sector will lead to shifting to other sectors and this generates a deadweight loss (DWL). The models are then simulated in computable general equilibrium models and tend to suggest relatively small efficiency costs—less than 20 percent of the revenue generated.

A more recent literature has sought to consider the efficiency costs of the corporate income tax in a different setting. In particular, Gravelle and Kotlikoff (1988; 1989; 1993) point out that there can be both corporate and noncorporate production in the same sector. Taxing corporate income may lead to much more shifting within sector between organizational forms than across different sectors. Using such a model they predict an extremely large DWL from the corporate income tax, frequently in excess of 100 percent of the revenue generated. The key determinant of the DWL in these models is how much firms in the same industry shift to non-corporate forms in response to the corporate income tax and this is an empirically testable idea.

In principle, it should be possible to estimate the efficiency loss from the corporate income tax by examining how much a corporate tax increase induces firms to shift out of

corporate form. This is the subject of Gordon and Mackie-Mason (1990; 1994; 1997) and Goolsbee (1998) specifically. It is also implicit in the large literature on how corporate taxes affect organizational form decisions such as Ayers et al. (1996), Carroll and Joulfaian (1997), Gentry (1994), Fullerton and Rogers (1993), Scholes and Wolfson (1990; 1991; 1992), and Plesko (1995; 1997). The results in Gordon and Mackie-Mason and in Goolsbee indicate that across different time periods, there does not seem to be much shifting in response to tax rates, suggesting that the DWL of the corporate income tax is relatively modest overall. (i.e., low shifting implies low distortions).

An underlying empirical problem in much of this literature comes from data constraints. Variation in corporate tax rates over the past 30 years has been almost. Further, the standard approach has been to look at time-series type regressions, typically at a highly aggregated level, though sometimes with a limited panel of firm level data. The problem is that when the corporate tax rate changes, such as in 1986, many other aspects of the tax code change, as well, making it difficult to be sure that one is picking up the effect of tax rates.

This paper turns to a new data source to identify the impact of the corporate income tax using cross-sectional variation in corporate tax rates in order to avoid the typical problems of the time-series based literature. It does this by looking at variations in corporate income taxes across states and combining that with unpublished data from the Department of the Census on the organizational form by 3 and 4 digit SIC code in the retail trade sector across states in 1992.

Although the census data have some problems that traditional tax data do not have, and although there the impact of state and federal corporate income taxes may differ (since firms have an easier time moving to different jurisdictions to avoid state taxes, for example) this cross-sectional approach allows for a direct estimate of the impact of tax rates on corporate incentives

to incorporate while controlling for aggregate factors. As a further matter, there is considerable interest in the subject of state corporate income taxes themselves.

This paper will examine the impact of corporate income taxes on firms' choice of organizational form decisions and the implied efficiency cost of the corporate income tax in 5 sections. Section 2 gives an overview of the way taxes may affect the organizational form choice and presents a simple model deriving the relative tax term. Section 3 summarizes the specification estimated in the paper and the data used. Section 4 presents the regression results. Section 5 concludes.

2. Overview of organizational form choices

A. Institutional Background

An enterprise that conducts business does not have to declare itself to be a corporation and thus can avoid any double taxation. The firm can be organized as a sole proprietorship or as a partnership in which case any income earned will flow through to the partners' or proprietor's individual income tax. Although this type of flow through entity would appear to have a tax advantage for most types of business entities, there are important non-tax factors that lead most business assets to end up in corporate form. The two most important are limited liability and access to capital markets. The investors and managers of corporations do not risk their individual assets or income when they take part in a firm. They are only liable for the amount that they have invested in the company. Corporations also have the right to trade on organized exchanges and typically have easier access to both debt and equity. Discussion of other non-tax factors relating to organizational form choices can be found in Guenther (1992) or Scholes et al (2002).

It is important to note some exceptions to this simple dichotomy of form choice. The first is that within the corporate sector, starting in 1958, certain firms could become S corporations (as opposed to the traditional C corporations). Income from S corporations are flow through entities like traditional partnerships, eliminating the double taxation without losing the limited liability. S corporations limit the number of shareholders to . More details on the comparison of S and C corporations can be found in Gordon and Mackie-Mason (1997). Recent years have seen a considerable expansion in hybrid organizational forms such as the Limited Liability Partnership, etc. which somewhat blur the lines between forms. At the time of this sample (1992), all such forms other than S corporations were rare or non-existant and, as I will indicate below, S corporations were not especially numerous in the retail sector.

B. A Simple Theory of Organizational Form

The stylized model of a firm's decision about whether to incorporate here follows the work of Gordon and Mackie-Mason (1994) with some extensions. Assume, for simplicity, that the income generated by a firm, Y, is the same regardless of organization type and that there is some relative non-tax benefit G associated with being a corporation which is itself a function of firm characteristics, x. The non-tax benefit is assumed to be non-taxable (e.g., something like the value of limited liability). The after-tax income from operating as a corporation each period is then

$$I_C = G(x) + Y(1 - t_C^{ST})(1 - t_C^F)(1 - t_e)$$

where t_C^{ST} is the state corporate income tax rate, t_C^F is the federal corporate income tax rate and t_e is the tax rate on equity income.[1] That is, a firm gets G plus income net of corporate and equity taxes and the state tax is deductible from the federal.[2]

The after tax income from a noncorporate firm is then

$$I_{NC} = Y(1 - t_P^{ST})(1 - t_P^F).$$

where t_P^{ST} is the state personal income tax rate facing the marginal investor and t_P^F is the federal personal income tax rate facing the marginal investor. In words, a noncorporate firm gets no G but pays only personal income taxes on the income.

Clearly, the firm will prefer the corporate form whenever

$$G(x) > Y(\tilde{t}_C + (1 - \tilde{t}_C)t_e - \tilde{t}_P)$$

where $\tilde{t}_i$ is the full marginal tax rate on income type i—i.e., accounting for state and federal taxation—according to

$$\tilde{t}_i = t_i^{ST} + t_i^F - t_i^{ST}t_i^F.$$

In the case where the effective rate of taxation on equity is zero, all that matters is the relative taxation of corporate versus personal income. The model illustrates that the key tax determinant of the decision of whether to incorporate is the relative taxation of corporate versus personal income. While each of these tax components can, to some degree, be measured, the sign of the relationship depends on whether taxable income is greater than zero and this fact that

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1 I will exclude discussion of the payroll tax whose method of payment differs for corporations versus partnerships/proprietorships but whose total burden is equal.

2 This is sufficient for almost all states. In five small states, however, at the time of the sample—Alabama, Iowa, Louisiana, Maryland, and North Dakota—the previous year's federal taxes are also deductible from the state taxes. I account for this in the empirical work.

is not observed in the census data. I will have to use proxies for profitability to examine whether this prediction is born out in the data.

This model is most relevant for small, entrepreneurial type firms. In particular, it is not a good approximation for multi-state firms. When a firm conducts business in multiple states, its marginal tax rate becomes a weighted average of tax rates in all the states it does business in according to the apportionment formula (see Gordon & Wilson, 1986; Goolsbee and Maydew, 2000). The evidence will, indeed, show that the empirical model fits much better in industries with a small number of establishments per firm.

3. Data

A. Specification

The basic regression of the paper will explain the corporate share of industry activity Y, say employment or revenue, for state s and industry i according to

$$\frac{Y_{is}^{Corporate}}{Y_{is}^{Total}} = \boldsymbol{a}_i + \boldsymbol{b}(TAX_s) + \Gamma' X_{is} + \Lambda' Z_s + \boldsymbol{e}_{is},$$

where TAX is the measure of the relative taxation of corporate income from the model above, $(\tilde{t}_C + (1 - \tilde{t}_C)t_e - \tilde{t}_P)$, X is a vector if state-industry characteristics that may influence the gains to incorporation, and Z is a vector of state level factors that may influence the likelihood of incorporation.[3]

B. Data on Organizational Form Across States and Industries

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3 The right hand side share variable is censored at 0 and 1 in a few cases (1-3 percent or the state-industries). In the results below I will use the linear regression model for simplicity, especially in dealing with the fixed effects. I have checked the results but using a Tobit estimator with censoring at 0 and 1 and the results were virtually identical.

The data on organizational form come from the Census of Retail Trade for 1992. This economic census is conducted every five years and is meant to provide comprehensive coverage of the sector. Retail trade, being primarily a non-tradeable, may not be representative of other sectors of the economy. It may, for example, be more sensitive to organizational form decisions than other industries are (for those industries, it is easier to change the location of production). That said, retail trade is an enormous sector on its own accord. In 1992, total sales in the retail trade sectors included in this sample exceeded $1.7 Trillion and employment was almost 17.5 million. This was divided between 8 broad classes of retail trade as shown in table 1. According to the BEA, in 1992 retail trade made up almost 9 percent of national GDP and the BLS reports that it employed about 16.5 percent of the nation's workforce.

The census of retail trade asks firms about their organizational form. The choices are corporate, partnership, sole proprietorship, and other. I will use the sum of all the non-corporate categories as the non-corporate share. One drawback of the Census data compared to tax return data is that the Census does not distinguish any of the hybrid organizational forms, most importantly, it does not differentiate S corporations from C corporations. The S corps are flow through entities so changes to the relative tax term may lead businesses to shift from C to S corporations in response to the tax but this will not show up as a change in the Census data since the firm will remain a corporation in both cases. This will no doubt bias the estimated impact of taxes on organizational form choices toward zero in the current sample. It is not possible to determine how important a factor this is because there is no publicly available information on the share of S corporations by state. The Statistics of income for 1992 for the entire nation, however, shows that the share of corporate returns in the wholesale and retail trade sector that are S corporations is about 20 percent. The share of total revenues in the corporate sector from S

corporations is about 5 percent. On average, then, the misclassification of corporations is relatively small, though they may be more sensitive on the margin than are other corporations.

Similarly, there is no income information in the data because it is establishment based and income is fundamentally a firm-level concept. This will prevent all but the most crude proxy for the differential responses of gain versus loss firms.

I received a special tabulation from the Census Bureau for each reported SIC code and each variable (employment, payroll, sales, firms, establishments) the totals by organizational form type. I will use the corporate share of the industry total as the dependent variable in the regressions. These special tabulations are subject to non-disclosure requirements meaning that the Census does not reveal information that could be used to learn about specific companies. So, for example, SIC code 5943, Stationery Stores is missing information on employment and sales in several smaller states. The missing observations are concentrated among the small states and the small industries, of course. In the 76 industries 3-digit industries, of the 1900 possible industry-state combinations, 15 have data on the number of corporate firms and establishments withheld for disclosure reasons. More of the employment, payroll and sales observations are withheld with about 210 of the 1900 possible observations missing for the corporate sector in these areas.

The data include information on the SIC codes listed in the Appendix table. I will mainly focus on the 3 digit SIC code level, though I will also present some results at the 2- and the 4- digit level. At lower levels of aggregation, not all the industries are covered. One of the big advantages of looking at the retail trade data is that there are many industries with a great deal of non-corporate activity, unlike manufacturing and some other prominent sectors. There is also a great deal of variation in the corporate share.

B. Data on Taxes and Other Control Variables

The components of the tax term are computed as follows: the combined federal and state tax on personal income for the marginal investor is the highest marginal rate in the state, combining federal and state taxation, as computed by the NBER TAXSIM for the year 1992 as reported in NBER (2002). For the corporate rate, I use the information in the Book of the States (1994) as well as Significant Features of Fiscal Federalism (ACIR, 1994) and compute the highest corporate marginal rate in the state, taking account of the deductibility of state taxes from the federal and the reverse in the relevant states. Michigan does not have conventional corporate income tax so I exclude it from the results.

The model above seems to outline the decision of the organizational choice of a small entrepreneur. For such a person, the tax on equity is different than for a larger company. Since small firms are unlikely to pay any dividends, however, and because there are several aspects of capital gains that are highly favorable to small entrepreneurs (greater deductibility of losses from ordinary income, for example), it it probably more accurate to assume the tax rate on equity is zero. I will do that here. Results were similar assuming equity taxation at the highest state capital gains rate, discounted for delayed realization as in Feldstein et al. (1983), instead, as demonstrated in an earlier version of this paper (Goolsbee, 2002).

Figure 1 plots $\tilde{t}_C$ for each state on the y-axis and $\tilde{t}_P$ on the x-axis. The difference between the two is the tax term so states well above the 45 degree line like Alaska, Pennsylvania and Connecticut tax corporate income relatively heavily compared with personal income and

places closer to or actually below the 45 degree line like South Carolina, Kansas and Vermont tax corporate income relatively lightly. 4

Industry characteristics that might influence the probability of incorporation (through, say, increasing the value of limited liability or access to capital markets) might be average firm size, pay, number of establishments per firm and the like. To keep things as general as possible, I will include the log of total industry sales, employment, payroll, number of firms and number of establishments. I tried including various ratios such as population density, sales per firm and so on, instead of the logs and the results were the same. Note that because there are dummies for every SIC code, the specifications fully account for any industry level variation in non-tax reasons for incorporation.

There may also be state characteristics that might influence the probability of incorporation in all industries. It is impossible to include state dummies since the tax rate does not vary across industries but I will include information on the log of the Gross State Product in the state in the year of the sample (1992) and the previous year (1991) from the BEA, the log of the land area and the log of population in the state from the U.S. Statistical Abstract and the share of the state population born outside the state (either domestic or foreign born) and the share of the people born in the state that are still living in the state both at the time of the 1990 census, calculated from U.S. Department of the Census (2002) as well as the share of the state that is rural. The view is that state income levels or growth rates, concentration of population, tax competition pressures from neighboring states or a higher transient/new population all might influence the probability of incorporation. I also include the share of the state that has some

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4 . The regressions will take these tax rates as exogenous. Though I do not have information about how the state tax rates were determined, I did try including other types of taxes which might be correlated with the unobserved business climate in the state such as the sales tax rate and generally did not find that it changed the results presented.

college education in the spirit of the theoretical work of Levin and Tadellis (2002). All of the

state level data, including the tax rates, summarized in Table 2.

4. Results

A. Basic Results

Results from the basic specification explaining the corporate share of firms,

establishments, employment, payroll, and sales in a given industry in a given state as a function

of the relative tax term and the other control variables are reported in table 3. This is for 38

different industries at the 3-digit SIC code level. There are SIC code dummies for the industries

so the coefficients indicate the impact that a state having a higher relative tax on corporations has

on its share of corporate activity relative to other states in that same industry. For each of the

types of economic activity, the coefficient on taxes is negative (and significant for all but one)

indicating that increasing the relative burden on corporations reduces the corporate share of

activity.

The coefficient on firms indicates that every .01 rise in the corporate income tax reduces

the corporate share of firms by .006. Interestingly, the results indicate that the share of firms

responds much more to the tax term than does the share of establishments. Similarly, the share

of employment, payroll and sales responds negatively, as well, but by less than does the number

of firms (this is especially true considering that the corporate share is higher for these variables

than for the number of firms). The number of firms may be more responsive than other

categories because state corporate tax rates are frequently progressive and a small firm can

remain in the lower marginal tax rate by simply starting a new firm rather than by growing.

The magnitudes of the tax coefficients are not precisely comparable to the effects estimated in the literature by Gordon and Mackie-Mason (1994; 1997) or Goolsbee (1998) because those papers dealt with the corporate share of capital or the share of reported income whereas these are for the number of firms and establishments and the level of sales, employment and payroll. That said, the coefficients on the tax term here are substantially larger than on the same tax term in those papers. The coefficients of the tax term on the share of industrial activity done by corporations here ranges from -.17 to -.60. The equivalent coefficients in the previous literature (on the overall corporate share of capital assets) generally ranged from -.001 to -.15.

B. Robustness

Next, in table 4, I examine the results at different levels of aggregation. For brevity, I will look at the corporate share of firms, employment and sales and leave establishments and payroll out of the tables. The results are highly related, just as in the previous table. At the 2-digit SIC code level, there is data is available for all of the industries, although there are only 8 SIC codes so the estimates are not estimated very precisely. The results, presented in columns (1)-(3) show a similar pattern with similar magnitudes but larger standard errors. For a subset of industries, there is more detailed data, i.e., down to the 4-digit SIC code level. These are concentrated only in the 2-digit SIC codes 57, 58 and 59. Looking at these 30 industries in columns (4)-(6) shows even larger effects than the 3-digit results did, especially for the 'real' factors of employment and sales.

In table 5, I deal with the robustness questions that might arise from weighting state-industries equally despite dramatically varying sizes. In theory, since the regressions are controlling for size of population of the state and the size of the sector, this should not matter but

there may be differences in the responsiveness for different sized industries. Columns (1)-(3) reestimate the regressions but weight them by state population size. The coefficients are of greater magnitude than before. Columns (4)-(6) present results from a median regression on the same data which again show that the magnitudes are not being driven by a small number of outliers or a few small states. The results here are even more sensitive to tax rates.

C. Explaining Differing Tax Sensitivities

Table 6 examines the issue of multi-establishment firms. Because of the higher probability of being multi-state firms (and thereby having tax rates that differ from the tax rates in the one state), firms with more establishments should appear less sensitive to state relative tax rates than do single establishment firms. The data do not go down to that level of detail but I can divide the observations between industries with average establishments per firm less than 2 and those with greater than or equal to 2. As the number of observations indicate, the majority of firms are in the few-establishments group, though there are about 10-15 percent in the multiple establishment group. As predicted, the corporate share of firms, employment and sales is quite significantly related to taxation among firms with a low number of establishments. This is presented in columns (1), (3) and (5). For firms with many establishments, presented in columns (2), (4) and (6), there is no significant effect of the tax rate in an individual state and the coefficients are much smaller.

Table 7 explores two things that ought to influence the tax sensitivity of various state-industries. The theory demonstrated that the impact of the tax term should have opposite signs for tax loss firms as for tax gain firms. In the Census data, of course, there is not even accounting profit information, much less reported taxable income. As a proxy, though, I will use

the ratio of total operating expenses relative to sales. Total operating expenses include payroll, benefits, costs of goods sold, materials and supplies, depreciation, leases, fuel and electricity but not capital expenditures. The payroll information is in the state level census data, the other operating expenses come from the national edition of the Census of Retail Trade-Assets and Expenditues Series. Some of those data are given at only the 2-digit level so I assume all SICs in the same 2-digit category have the same operating expense ratio in these cases. The measure of total expenses ranges from 71 percent of sales for Department Store Retailers to more than 98 percent of sales for Radio, Television and Music stores and for Grocery Stores.

Columns (1)-(3) interact this measure of operating expenses with the relative tax term. If the percent of sales revenue remaining after subtracting total operating expenses is a crude measure of profitability then the tax term should be less important in industries with higher expense ratios. In other words, the interaction term should be positive if the measured tax term is less important for firms making losses (i.e., with high expense ratios). The results have the correct signs although they are clearly noisy, especially as regards employment and sales.

The last 3 columns then explore whether sensitivity to tax rates is related to the physical size or to the population of the state. At the outset, I noted that the sensitivity to state corporate income taxes might be greater than to federal income taxes because corporate firms can move locations as well as change organizational status in response to local variation. In small or sparsely populated places like Vermont, firms may react very negatively to a tax increase whereas in a place like California they may want to remain in the market and as corporations no matter what the cost. To explore this, I interact the tax term with the log of population and the log of land area in the state. For the corporate share of firms in the state-industry, both variables matter. For employment and for sales, only the physical size of the state matters. In every case,

the smaller the state, the greater is the sensitivity to relative tax differentials. The magnitudes are quite large. Take corporate employment. For a state in the 5th percentile of the size distribution (Connecticut), raising the relative tax term by .01 reduces the share of corporate share of firms in the state-industry by .014. For a state in the 95th percentile, the effect is zero (the point estimate is -.001).

5. Conclusion

Using new, cross-sectional census data across states and industries in the retail trade sector, this paper has shown that the relative taxation of corporate to personal income plays an important role in the share of firms, employment and sales that are done by corporations versus partnerships and sole proprietorships. An increase in the corporate tax rate by .10 reduces the corporate share of firms by 5-10 percent and the corporate share of sales and employment by 2-6 percent. Given the lack of data on S corporations in the census data, this is likely to be an underestimate of the true shifting. This impact of tax rates is an order of magnitude larger than previous estimates based on time-series variation in the tax rate and suggests a larger DWL from corporate taxation but is still relatively modest.

Table 1: Census of Retail Summary

SIC CODE	Firms	Sales (000s)	Employees (000s)
52: Building Materials & Garden Stores	56,431	98,730	665
% Corporate	.694	.905	.887
53: General Merchandise Stores	11,520	245,100	2,076
% Corporate	.564	.989	.985
54: Food Stores	129,100	368,600	2,964
% Corporate	.478	.904	.882
55: Auto Dealers	80,213	393,300	1,261
% Corporate	.728	.930	.918
56: Apparel and Accessory Stores	69,500	101,400	1,141
% Corporate	.613	.903	.905
57: Furniture and Home Furnishing Stores	82,310	92,970	701
% Corporate	.633	.870	.849
58: Eating and Drinking Places	335,285	194,300	6,522
% Corporate	.538	.791	.791
59: Miscellaneous Retail	240,015	183,400	1,764
% Corporate	.546	.808	.786

Source: Author's calculations

Table 2: State Level Data Summary

Ln (GSP 1991)	11.174 (1.039)
Ln (GSP 1992)	11.118 (1.040)
GSP Growth 1991 to 1992	.058 (.026)
% 1990 Population Born in state	.610 (.141)
% Born in the state still there in 1990	.635 (.084)
% Rural	.318 (.147)
% with Some College Education	.452 (.066)
Relative Tax Term	.035 (.021)
$t_{Corporate}$ (including federal)	.391 (.020)
$t_{Personal}$ (including federal)	.356 (.024)
Number of observations	49

Source: Author's calculations

Table 3: Basic Results-3 Digit SIC Code Level for Corporate Share

	(1) Firms	(2) Estab	(3) Employment	(4) Payroll	(5) Sales
Tax Term	-.599 (.127)	-.376 (.124)	-.299 (.115)	-.166 (.119)	-.258 (.127)
ln (GSP 91)	.041 (.104)	-.014 (.101)	.011 (.094)	.080 (.097)	-.007 (.103)
ln (GSP 92)	-.009 (.111)	.044 (.109)	-.003 (.100)	-.086 (.103)	-.000 (.109)
% Rural	-.077 (.028)	-.113 (.028)	-.093 (.026)	-.101 (.027)	-.101 (.028)
% Some College	-.163 (.059)	-.187 (.058)	-.185 (.053)	-.204 (.055)	-.260 (.059)
% Stay in State	-.155 (.052)	-.042 (.051)	-.055 (.046)	-.064 (.048)	-.018 (.051)
% Born in Stay	-.115 (.024)	-.079 (.024)	-.037 (.022)	-.037 (.023)	-.065 (.024)
ln (land area)	-.052 (.003)	-.040 (.002)	-.022 (.002)	-.015 (.002)	-.024 (.002)
ln (population)	-.002 (.020)	-.021 (.021)	-.018 (.019)	-.007 (.020)	-.010 (.022)
ln (employment)	-.084 (.019)	-.023 (.019)	-.028 (.019)	-.009 (.019)	-.003 (.020)
ln (# firms)	-.023 (.011)	-.101 (.010)	-.035 (.010)	-.002 (.010)	-.012 (.011)
ln (# establish.)	-.059 (.016)	.036 (.016)	-.049 (.015)	-.060 (.015)	-.086 (.016)
ln (sales)	-.030 (.016)	-.036 (.015)	-.045 (.014)	-.069 (.015)	-.057 (.016)
ln (payroll)	.184 (.021)	.131 (.020)	.175 (.020)	.162 (.020)	.183 (.022)
Industry Dums.	Yes (38)	Yes (38)	Yes (38)	Yes (38)	Yes (38)
obs	1783	1783	1647	1647	1647
R2	.72	.71	.66	.57	.63
Mean of Dep Var	.626	.698	.860	.826	.830

Notes: The dependent variable is the corporate share of the variable listed at the top of the column. The independent variables are defined in the text. The standard errors are listed in parentheses.

Table 4: Results at Different Levels of Aggregation

	(1) SIC 2-digit Firms	(2) SIC 2-digit Empl.	(3) SIC 2-digit Sales	(4) SIC 4-digit Firms	(5) SIC 4-digit Empl.	(6) SIC 4-digit Sales
Tax Term	-.489	-.211	-.196	-.640	-.408	-.359
	(.202)	(.106)	(.170)	(.154)	(.121)	(.147)
Other Controls	13 Vars	13 Vars	13 Vars	13 Vars	13 Vars	13 Vars
Industry Dums.	Yes (8)	Yes (8)	Yes (8)	Yes (30)	Yes (30)	Yes (30)
obs	391	391	391	1343	1216	1216
R2	.73	.79	.57	.62	.70	.63

Notes: The dependent variable is the corporate share of the variable listed at the top of the column. The first three columns use a sample of 2-digit industries. The last three columns use a sample of 4-digit industries. Each of the regressions includes the same 13 covariates that were listed in the regressions of table 3. The standard errors are listed in parentheses.

Table 5: Robustness

	(1) Pop weight Firms	(2) Pop weight Empl.	(3) Pop weight Sales	(4) Median Firms	(5) Median Empl.	(6) Median Sales
Tax Term	-.448 (.150)	-.318 (.120)	-.388 (.132)	-.937 (.165)	-.440 (.104)	-.402 (.083)
Other Controls Industry Dums.	13 Vars Yes (38)	13 Vars Yes (38)	13 Vars Yes (38)	13 Vars Yes (38)	13 Vars Yes (38)	13 Vars Yes (38)
obs	1783	1647	1647	1783	1647	1647
R2	.68	.68	.64	--	--	--

Notes: The dependent variable is the corporate share of the variable listed at the top of the column. The first three columns weight observations by state population.. The last three columns use median regressions. Each of the regressions includes the same 13 covariates that were listed in the regressions of table 3. The standard errors are listed in parentheses.

Table 6: Tax Sensitivity by Industry's Average Firm Size

	(1) <2 est/firm Firms	(2) ∃2 est/firm Firms	(3) <2 est/firm Empl.	(4) ∃2 est/firm Empl.	(5) <2 est/firm Sales	(6) ∃2 est/firm Sales
Tax Term	-.684 (.133)	-.024 (.427)	-.377 (.118)	-.093 (.236)	-.336 (.132)	-.163 (.169)
Other Controls Industry Dums.	13 Vars Yes	13 Vars Yes	13 Vars Yes	13 Vars Yes	13 Vars Yes	13 Vars Yes
obs	1569	214	1451	196	1451	196
R2	.70	.78	.66	.88	.62	.94

Notes: The dependent variable is the corporate share of the variable listed at the top of the column. Columns (1), (3) and (5) look at industries where firms have, on average, average fewer than 2 establishments. Columns (2), (4), and (6) show those having greater than or equal to 2. Each of the regressions includes the same 13 covariates that were listed in the regressions of table 3. The standard errors are listed in parentheses.

Table 7: Explaining Tax Sensitivity Across States and Industries

	(1) Firms	(2) Empl.	(3) Sales	(4) Firms	(5) Empl.	(6) Sales
Tax Term	-3.066 (1.442)	-1.729 (1.319)	-1.214 (1.456)	-6.534 (1.012)	-3.092 (.947)	-2.519 (1.047)
Tax Term Interacted with: Industry-Level Expenses/Sales	2.636 (1.534)	1.528 (1.404)	1.021 (1.549)			
Ln (Population)				.427 (.116)	.034 (.107)	-.022 (.118)
Ln (land)				.515 (.094)	.261 (.089)	.217 (.098)
Other Controls Industry Dums.	13 Vars Yes (38)	13 Vars Yes (38)	13 Vars Yes (38)	13 Vars Yes (38)	13 Vars Yes (38)	13 Vars Yes (38)
obs R2	1783 .72	1647 .66	1647 .63	1783 .72	1647 .66	1647 .63

Notes: The dependent variable is the corporate share of the variable listed at the top of the column. The first three columns interact the tax term with the expense ratio, as defined in the text. The last three columns interact the tax term with the size of the state in terms of land and population. Each of the regressions includes the same 13 covariates that were listed in the regressions of table 3. The standard errors are listed in parentheses.

APPENDIX TABLE: SIC CODES INCLUDED

2-Digit SIC code regressions
```
5200   Building Materials and Garden Supplies Stores
5300   General Merchandise Stores
5400   Food Stores
5500   Automotive Dealers
5600   Apparel and Accessory Stores
5700   Furniture and Homefurnishings Stores
```

3-Digit SIC code regressions

```
5210   Lumber & Other Building Mtrls Dealers      5550   Boat Dealers
5230   Paint, Glass, and Wallpaper Stores         5560   Recreational Vehicle Dealers
5250   Hardware Stores                            5570   Motorcycle Dealers
5260   Nurseries, Lawn & Garden Stores            5590   Automotive Dealers, N. E. C.
5270   Manufactured (Mobile) Home Dealers         5610   Men's Clothing & Accessory Stores
5310   Department Stores                          5620   Women's Clothing Stores
5330   Variety Stores                             5630   Women's Accessory & Specialty Stores
5390   Misc. General Merchandise Stores           5640   Children's and Infants' Wear Stores
5410   Grocery Stores                             5650   Family Clothing Stores
5420   Meat and Fish (Seafood) Markets            5660   Shoe Stores
5430   Fruit and Vegetable Markets                5690   Misc. Apparel and Accessory Stores
5440   Candy, Nut, and Confectionery Stores       5720   Household Appliance Stores
5450   Dairy Products Stores                      5730   Radio, TV, Computer, & Music Stores
5460   Retail Bakeries                            5910   Drug and Proprietary Stores
5490   Miscellaneous Food Stores                  5920   Liquor Stores
5510   New and Used Car Dealers                   5930   Used Merchandise Stores
5520   Used Car Dealers                           5940   Miscellaneous Shopping Goods Stores
5530   Auto and Home Supply Stores                5960   Nonstore Retailers
5540   Gasoline Service Stations                  5980   Fuel Dealers
```

4- Digit SIC code regressions

```
5712   Furniture Stores
5713   Floor Covering Stores
5714   Drapery, Curtain, Upholstery Stores
5719   Miscellaneous Homefurnishings Stores
5731   Radio, TV, and Electronics Stores
5734   Computer and Software Stores
5735   Record and Prerecorded Tape Stores
5736   Musical Instrument Stores
5812   Eating Places
5813   Drinking Places
5941   Sporting Goods and Bicycle Shops
5942   Book Stores
5943   Stationery Stores
5944   Jewelry Stores
5945   Hobby, toy, and game shops
5946   Camera and photographic supply stores
5947   Gift, novelty, and souvenir shops
5948   Luggage and leather goods stores
5949   Sewing, needlework, piece good stores
5961   Catalog and Mail-Order Houses
5962   Automatic Merchandising Machine Ops.
5963   Direct Selling Establishments
5983   Fuel Oil Dealers
5984   Liquefied Petroleum Gas Dealers
5989   Fuel Dealers, N. E. C.
5992   Florists
5993   Tobacco Stores and Stands
5994   News Dealers and Newsstands
5995   Optical Goods Stores
5999   Miscellaneous Retail Stores, N.E.C.
```
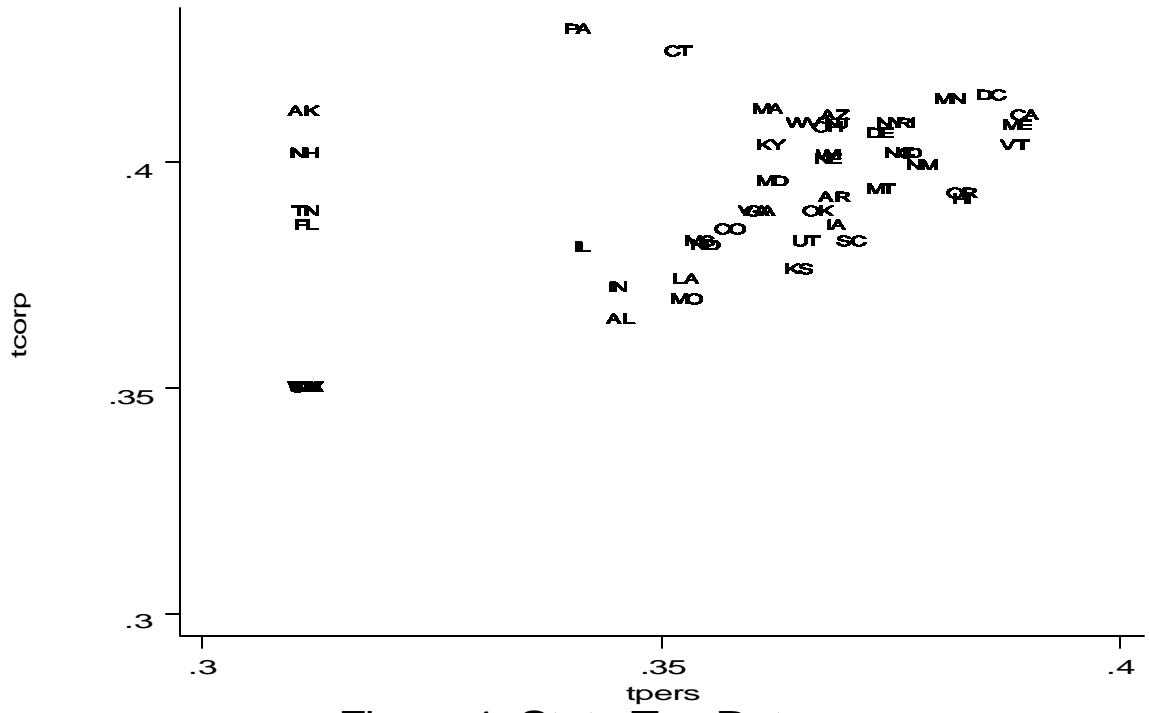
Figure 1: State Tax Rates

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