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TAXATION MAXIMIZATION:
WHY STATES TAX THE
WAY THEY DO

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
Economics

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by
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Accepted by:
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ABSTRACT

This paper examines state tax systems and provides an explanation for their structure. The results of this study show that states maximize the value of a tax by increasing its use based on the demographic makeup of the state. Furthermore, this paper provides some evidence that groups are not successful in lobbying state legislatures to protect themselves from taxation.

ACKNOWLDGEMENTS

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CHAPTER I

INTRODUCTION

All levels of government in the United States tax. From the federal behemoth to the local school board, each extracts money from its constituents. Government has many options when collecting these funds. Much like in production, there is a taxation frontier.

A production possibilities curve maps the allocation of resources needed to produce products such as televisions and bulldozers. A taxation possibilities curve shows how government can mix taxes such as property, income, and sales to collect the funds used to operate their enterprises. There exists an infinite number of ways to produce televisions and bulldozers. There is also an infinite number of ways to tax. A taxation possibilities curve is depicted below in Figure 1. The choice here is between sales and property tax. The frontier represents the maximum amount that government can extract from its citizens without creating civil unrest. The curves V_1 and V_2 are voter indifference curves similar to those used by Peltzman (1976). Point A represents the point of equilibrium between the voters and the taxation frontier. In this case the state would levy sales tax equal to S^* and property tax equal to P^*. In production the interesting questions are raised when trying to understand why production choices are made. Similarly, government becomes interesting when attempting to understand how it makes its many decisions.

Figure 1: Taxation Possibilities Curve
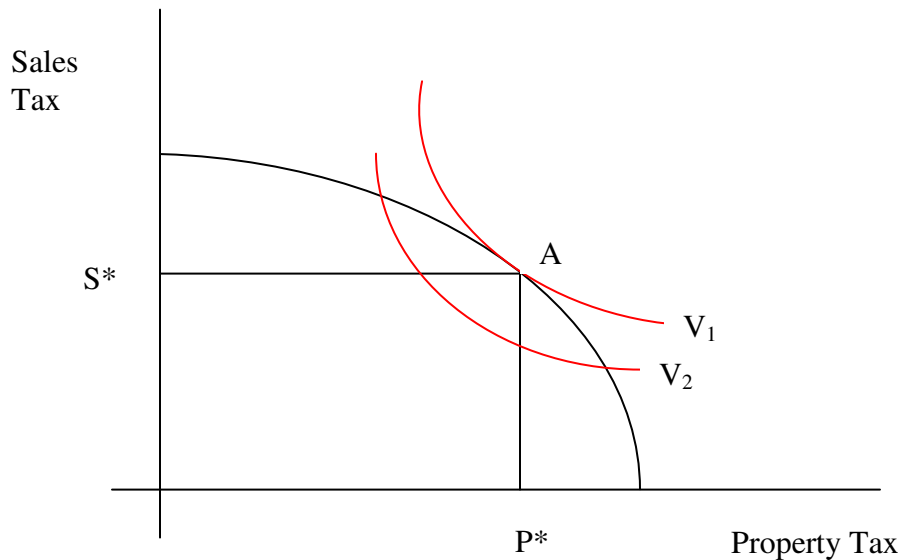
Citizens demand a vast and limitless array of services, and states provide many of these at the cost of taxation and the resulting deadweight losses. To produce whatever services it does, government must generate revenue. This revenue is generated by taxation. However, this is government not private business. Those demanding the service are not required to pay the full cost or even any of the cost of the service. The government decides how to gather the revenue and provide the services. I assume they will choose a combination of taxes that places them on the taxation frontier. This choice is the subject of this paper.

This study will examine the composition of state tax systems. The next section provides an overview of the types of taxes used by states. Next, a review of the literature will build a framework for this study. Regression results will be reported that explain the state tax structure. Finally, some concluding statements will be made.

CHAPTER II

TYPES OF TAXES

Property Tax

Property tax has unique characteristics. Unlike the other forms of taxation in which the tax base is determined by private activity, the property tax base is a creation of the government. The legislature has wide ranging discretion over what type and the amount of property included in the base. In addition, the government determines how property is valued and what percentage of that value will be taxed.

A. Assessment Method

Once the decision of what property will be taxed is made, the property must be assessed. Government assigns this duty to a private individual, or in the case of Maryland and Montana, a government agency. It is the duty of the assessor to accurately determine the value of the property. Obviously, this can be a subjective decision. Several methods have been developed in order to inject some objectivity into the process.

The three methods used in assessment are the comparative sales approach, the cost approach, and the income approach. The comparative sales method uses data from recent sales of similar property to determine value. The cost approach uses the historical cost of the property as a starting point. Adjustments are then made based on depreciation and improvements made to the property. The third

method, the income approach, determines the present value of the net income expected to be generated by the property.

B. Rate

While technically a tax rate is determined once the assessment is determined, it is probably conceptually more appropriate to imagine that the tax rate and assessment are determined contemporaneously as the legislature determines the amount of tax it wishes to collect via this route. In addition, once the rate is set, if assessed property value increases from one year to the next, additional revenue can be raised without moving the rate. Government can claim that taxes have not been raised, yet revenue has increased. However, this ruse will be ineffective if the public is even somewhat intelligent.

It is important to remember that there are often institutions competing within the state for property tax revenue. Counties, cities, and even school districts are allowed to use property tax to generate revenue. Laws and regulations are in place that set up a priority system. Each jurisdiction is given taxation powers over a certain type of property or percentage of property. These jurisdictions must find an equilibrium so that they are not overtaxing property.

C. Tax Relief

The first instrument used to provide property tax relief is a limit on assessed values. Because the legislature is in control of the assessment process, this limit insures property owners that the legislature will not use this control to boost tax revenue. Another form of relief is the homestead exemption. This allows for a percentage of the home value to be exempt from taxation. Similarly,

farmland is assessed differently than normal land and is often completely exempt from taxation.

The final two methods of relief allow tax payers to credit or deduct their property tax expense. Tax payers who itemize their federal income tax are allowed to deduct their property tax bill from their federal income tax. Similarly, if the property tax exceeds a certain percentage of a taxpayer's income, they are allowed to credit that payment on their state income tax. Senior citizens, who have low income tax bills but high property tax bills, are the target of this relief.

Sales Tax

A sales tax, in its truest form, is intended to be a tax on the final personal consumption of residents of the jurisdiction levying the tax. However, in reality it falls very short of this ideal. There are many reasons why a pure sales tax does not exist. Perhaps the most basic is that society has become extremely mobile. In the past, it was an event when a person left their hometown. Today, the cost of travel is much lower. Because of this change, consumption is not always performed in a consumer's jurisdiction of residence. The sales tax has become as much a tax on visitors as it is on residents.

However, a sales tax is technically a use tax. Therefore, if a person attempts to avoid sales tax by purchasing a car, or any other good, in an adjacent state, legally they are required to pay a use tax within their state of residence. This applies to purchases made not only in brick and mortar stores, but also online merchants.

Traditionally, states have been unable to collect use tax on small ticket items such as books, clothing, etc. Use tax has typically been collected on items such as cars and boats that must be registered through the state. However, due to the increase use of online retailers, states have become aggressive in collecting use tax. Some states now include a line item on state income tax requiring the estimation of purchases made online or out of state. States rely on sales tax to fund many state sponsored programs, and they will adapt in order to capture this revenue.

A. Base

As mentioned above, a true sales tax would be a tax on all uses of income except investment. In reality, states exempt major categories of consumption from taxation. It is politically impossible to have a true sales tax. Consumption goods have become the biggest targets of sales tax. Today only about 50-60% of total consumption across the country is taxed.

B. Location

There are two options when deciding when to tax consumption. The tax can be applied at the origin or at the destination. In today's society, rarely do these two places overlap. Therefore, there is the potential for the tax to be applied at both locations. However, this is rarely the case. More often than not the destination is the point of taxation.

C. Exemptions

Due to the nature of sales tax, the tax burden is proportional to the level of consumption. Therefore, those with high incomes use a smaller percent of

income for consumption than those with relatively lower incomes. This is what is known as a regressive tax. Because of this, exemptions or credits are granted for necessities. A credit system is more effective in creating a progressive tax structure. Exemptions change the relative price of goods and encourage the purchase of untaxed goods. Credits simply lower the tax burden of those with low incomes.

Income Tax

Ever since the passage of the sixteenth amendment Americans have been very familiar with the term income tax. However, the federal government is not alone in their use of income tax to generate revenue. Forty one of the states have broad based income taxes. Two others, Tennessee and New Hampshire, have a tax on capital income only.

A. Base

Unlike the federal income tax, which uses the entire earned income as the starting base, the calculation of the base at the state level varies. Many states simply use the federal government base. The only difference becomes the rate applied to this taxable income. Other states take a percent of the federal income tax and then adjust that percentage based on interest payments and other factors. The third method is called the Federal Adjusted Gross Income. This is a formula that manipulates the federal number. In addition, states allow exemptions and deductions that are defined within the state. The final method is state specific rules. Much like the property tax, states can become very creative in how they define the tax base.

CHAPTER III

LITERATURE REVIEW

While this paper will explore the structure of state tax systems, it could not

exist without the literature of public choice and the growth of government. Much

of the structure and foundation of this paper comes from the McCormick and

Tollison work: *Politicians, Legislation, and the Economy*. Their examination of

legislatures and their decision was crucial to the development of this paper. In

chapter three, McCormick and Tollison provide four testable implications. They

hypothesize that the more equal the size of the houses of a legislature, the more

interest group activity. Also, larger legislatures seem to negatively impact interest

group activity. Finally wealthier and more populous jurisdictions lead to more

rent seeking and interest group activity. This study will substitute taxation for

interest group and rent seeking activity. These are closely related and somewhat

interchangeable.

If government was an insignificant part of the economy, any study of it

would also be insignificant. However, the size of the federal and state

governments has expanded exponentially over the past century. Peltzman (1980)

provides an overview of this growth. He states the growth of the middle class and

the overall leveling of income is the major source of growth. The middle class

shares common interests and is able to organize and voice these interests. They

demand services from government, and their voice is heard because it is loud and

unified. Government simply cannot ignore a major segment of the population calling for larger government.

Becker and Mulligan (2003) provide additional explanation for growth. The tax system has become more efficient over the past fifty years. Taxes themselves have not only become more efficient, but the collection mechanisms have also become much more efficient. Becker and Mulligan provide evidence that these improved efficiencies, coupled with the growth in the efficiency on the spending side have driven growth.

Tax structure has also been examined in the literature. Hettich and Winer (1988) found that there is no link between the tax structure and expenditure. However, they did make the point that the tax structure is a result of the minimization of opposition to the structure. Government finds the path of least resistance and then taxes along that path.

Sauer (2001) arrived at a similar conclusion. His study of gambling regulation showed that as the deadweight cost of taxation increases, government has to find alternative revenue sources. Government finds taxes that have a lower relative price and adds them to the tax menu. The government maximizes the value of this tax, and then moves on to the next revenue source.

CHAPTER IV

DATA

This study uses state tax collection data from the years 1993 to 2005 gathered from the United States Census Bureau. This data contains information on all tax collections of all fifty states. The data is itemized into four categories: property, sales, income, and all other taxes. Summary statistics can be seen at the end in Table One.

In addition to the tax collection data, demographic data for each state was gathered from the Census Bureau. This includes information on age, race, sex, per capita income, population density, state legislatures, and several other categories. Summary statistics for these can be seen in Table Two.

The variables are straightforward but a few need to be described more carefully. Legislature size is the number of seats in both the house and senate of the state legislatures. Next is a dummy variable indicating if the legislature meets every year. The house to senate ratio is the number of seats in the lower house divided by the number of seats in the upper house. Finally, population density is the number of people per square mile in each state.

CHAPTER V

MODEL

In order to explain the tax system composition for the states, a total tax equation must first be estimated. After the total tax equation is found, share equations will be estimated. There will be four share equations for each observation. These will be based on the four taxation categories: property, sales, income, and all other.

When modeling share equations, it can be difficult to obtain efficient coefficient estimates. Zellner (1962) provides the process to insure this efficiency. Each regression will be estimated with one share equation dropped. After these series of regressions are estimated, they will be compared to a seemingly unrelated regression where all share equations are included. If the coefficients and standard errors differ greatly, the results of the regressions with each share equation omitted will be averaged to provide efficient estimators.

CHAPTER VI

RESULTS

The results of the regressions can be seen in Table Three. Coefficients

and *t*-statistics are reported for each variable. The system of regressions with the

omitted share equations was identical to the system when all were included.

Therefore, the coefficients reported are efficient.

Taxes are named for what they tax. These names sometimes distract from

the fact that people are paying the taxes. In order to understand how states tax, it

is imperative to see what groups of people influence the use of a certain type of

tax.

Income

Young white females increase the use of income tax by state governments.

The coefficients of each of these variables were significant in the regression. This

is a counterintuitive result. Young people's wealth is composed mainly of earned

income. They have not had time to save or invest in other wealth producing

opportunities. Conversely, older people usually have lower wage income than

working people. They have retired and are living off of investments. Therefore,

it would be likely that those over sixty-five years of age would be demanding

higher income tax. They would be able to benefit from the services provided by

the state without having to pay.

Kau and Rubin (1981) claim that females entering the labor force were a

significant factor in the growth of government in the middle part of the twentieth

century. This effect could be showing up in this data. Governments see a segment of the population that has not been taxed. It is an alternative revenue source that can be exploited. Therefore, the government will tax this previously protected segment.

Property

Much like the results above for income tax, the property tax regression provides a counterintuitive result. The coefficients for white and male were both statistically significant. Historically, white males have been the primary land holder in the United States. This is a group that should be fighting property taxation. However, they are the primary source for its growth.

This seems to be a repeat of the income tax result. Because white males own the most property, they are the most valuable group for property taxation. They are the biggest target and the most valuable to the government. State governments are maximizing the value of the property tax by focusing on the group that owns property.

Sales

Once again, the sales tax regression provides an unexpected result. The over 65 and male variable were both statistically significant in the regression. Older members of the population should be vehemently opposed to sales tax. Personal consumption is the predominant activity of older people. They are no longer working and earning income, but they are spending from their retirement accounts. Therefore, they should be vocal in their opposition to sales tax. Becker and Mulligan (1999) showed that the elderly are one of the most politically

powerful demographics in society. The older members of the population should be able to influence government to protect their interests.

The question becomes why does the regression show that the increased presence of the elderly result in more sales tax? The answer comes back to the potential for taxation. The elderly spend. In fact, that is all they do. They are no longer earning income. The only way for the government to tax them is to do it through sales tax. Apparently, the voice of the elderly is not loud enough to protect them from the taxation powers of the state governments.

Other Results

McCormick and Tollison's work on legislatures and interests groups provided four testable implications. The hypothesis that wealthier states resulted in higher total tax revenue held in this study. In the share equations, only sales produced a negative sign on income per capita. In all other regressions the coefficient on income per capita was positive, and only in the property tax regression was the coefficient insignificant.

The prediction that tax revenue would decrease as the size of the legislature increased was found to be false. In both the total tax revenue regression and the share equation regressions, the coefficient on legislature size was positive. Only in the total tax regression was the coefficient significant.

However, the ratio of house sizes proved to follow the results of McCormick and Tollison. The sign on the ratio coefficient in the total tax revenue regression was negative and significant. Additionally, the income tax share equation further confirmed the hypothesis as it was also negative and

significant. The property and sales coefficient was positive, but in each case it was insignificant.

McCormick and Tollison hypothesized that the population coefficient would be positive. The regression results here confirm this hypothesis. In both the total tax revenue and sales regression the coefficient was positive. Indicating as population grows tax revenue grows. However, only in the sales tax regression was the variable significant. The income and property coefficient was negative, but insignificant in each equation.

CHAPTER VII

CONCLUSION

Overall, the value of this paper is the proof that governments rationally organize their tax structure in order to maximize its value. The legislature responds to the demographic makeup and adjusts the menu of taxes based on the activity of groups. As in production where inputs are used in order to maximize their value to the production process, taxes are administered to maximize their value to the state.

In addition, this study shows that groups are not very successful in lobbying government to prevent from being taxed. It could be the case that these groups are not vocal enough to prevent from being taxed. There is opportunity for further exploration of the success or failure of lobbying efforts.

APPENDIX

Table 1: State Tax Revenue Statistics (Thousands)

Variable	Observation	Mean	Std Deviation	Min	Max
Total Tax	650	9,821.71	12,100.00	589.069	98,400.00
Income	650	3,312.46	5,343.66	0	44,600.00
Property	650	203.00	537.48	0	3,870.61
Sales	650	4,764.32	5,549.94	96.014	37,700.00
Other	650	1,541.93	1,902.57	118.515	15,600.00

Table 2: State Demographic Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Income Per Capita	650	26730.11	5555.895	15290	47519
Income Per Capita Growth	650	0.0400	0.0543	-0.3589	0.5445
Percent Over 65	650	0.1264	0.0194	0.0452	0.1855
Percent Male	650	0.4908	0.0083	0.4789	0.5279
Percent White	650	0.8419	0.1195	0.2614	0.9855
Population Growth	650	13.838	11.1727	0.500	66.3
Legislature Size	650	147.62	59.5985	49	424
Legislature Meets Every Year	650	0.88	0.3252	0	1
House to Senate Ratio	650	2.8961	2.1742	0	16.667
Population Density	650	177.4724	242.2842	1.0438	1172.776

Table 3: Regression Results

Dependent Variable	Total Tax	Percent Income	Percent Property	Percent Sales	Percent Other
Income Per Capita	**574.115***	**6.33e-06***	6.32e-08	**-3.64e-06***	-2.32e-06
	(5.29)	**(4.01)**	(0.13)	**(-2.43)**	(-2.17)
Income Per Capita Growth	-851741.3	-0.0868	-0.0461	0.1259	-0.0011
	(-0.11)	(-0.80)	(-1.34)	(1.22)	(-0.01)
Percent Over 65	-3.53e+07	**-2.0385***	0.1668	**3.4312***	**-1.5850***
	(-1.20)	**(-4.90)**	(1.26)	**(8.69)**	**(-5.64)**
Percent Male	4.30e+07	**-8.1063***	**2.0920***	1.034	**5.2988***
	(0.44)	**(-5.83)**	**(4.75)**	(0.78)	**(5.65)**
Percent White	-6849543	**0.1657***	**0.0485***	**-0.2348***	0.0166
	(-1.77)	**(3.01)**	**(2.78)**	**(-4.50)**	(0.45)
Population Growth	60294.24	-0.0012	-0.003	**0.0062***	**-0.0048***
	(1.35)	(-1.91)	(-1.61)	**(10.26)**	**(-11.23)**
Legislature Size	**105813.7***	0.0044	0.0001	0.00012	**-0.0007***
	(7.13)	(2.00)	(1.49)	(0.57)	**(-4.46)**
Legislature Meets Every Year	1491334	0.0197	0.0044	**0.0769***	**-0.1014***
	(0.94)	(0.87)	(0.61)	**(3.58)**	**(-6.63)**
House to Senate Ratio	**-2664989***	**-0.0311***	0.0025	0.0050	**0.0242***
	(-7.27)	**(-5.72)**	(1.43)	(0.97)	**(6.58)**
Population Density	3788.967	0.00002	-0.00001	-0.00006	0.00059
	(1.51)	(0.57)	(-1.26)	(-1.95)	(2.45)
Total Tax Revenue	n/a	1.54e-10	1.66e-11	6.33e-10	-7.92e-10
		(0.25)	(0.09)	(1.10)	(-1.94)
Constant	2.71e+07	**4.2635**	**-1.0844**	-0.3449	**-1.9889**
	(-0.54)	**(6.03)**	**(-4.84)**	(-0.51)	**(-4.17)**
R-Squared	0.2268	0.2556	0.1466	0.2675	0.4483
Observations	550	550	550	550	550
* Indicates significance at 1% level					

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