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Exploring the relationship between income and property taxation at the municipal level

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Exploring the relationship between income and property taxation at the municipal level

by

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Program of Study Committee:
Alex Tuckness, Co-major Professor
Paul Coates, Co-major Professor
Mack Shelley

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ABSTRACT

Municipalities in Iowa are heavily reliant upon property tax revenue as a means of finance; a phenomenon which many feel has negative implications for local governance. A frequently cited remedy for this is the diversification of municipal revenue sources by enabling municipalities to collect income tax. Proponents claim that doing so would allow municipal governments to become less dependent upon property tax revenue, as well as provide relief to property taxpayers in the form of lower rates and collections. The purpose of this thesis is to explore those claims by examining whether municipalities with income tax exhibit lower property taxes and are less dependent upon property tax revenue than municipalities with income tax. The study takes the form of a cross-sectional analysis of municipalities in Ohio, a state in which there are a large number of municipalities utilizing income tax, as well as a large number of municipalities that are not. The analyses show that municipalities with income tax have lower property tax rates and are less dependent upon property taxes than municipalities without income tax. Overall, the findings lend credence to claims that allowing Iowa's municipal governments to collect income tax would enable them to reduce their dependence on property tax revenue and lower property tax rates.

I. INTRODUCTION

"Iowa cities can provide a significant part of the growth that will fuel Iowa's
economy in the foreseeable future—but not if our system of financing cities
remains as antiquated as it is today."
–Des Moines City Manager Richard Clark, 9/12/07

Richard Clark is hardly alone in his assessment of Iowa's system of

financing cities; many others, ranging from local government officials to private

developers, feel that Iowa cities' finance structures are in need of an overhaul. To

evidence this, many proponents of change often claim that cities in Iowa are too

heavily reliant on property taxation as a method of finance, citing an extensive list

of negative implications that result from this (Prosser, 2007). This list can range

from ideological objections to empirical evidence, but commonly includes: overly

high and burdensome property tax rates, imbalance among the overall property

tax burden across different classes of property, and diminished or suppressed

levels of economic development. It is not coincidental therefore, that many

citizens also view property taxation as the least preferred method of government

finance (Clark, 2007).

One proposed method of reducing cities' reliance upon property taxes is to

diversify the sources of revenue that they collect. Often accomplished through

introducing what are referred to as 'alternative revenue sources,' this can include,

but is not limited to: adding local option sales taxes, use and service fees,

franchise fees, and local income taxation to the set of revenue sources. Iowa's

'home rule' amendments to the state constitution mandate that counties and

municipalities within the state do not have the power to levy any tax unless

expressly authorized by the Iowa General Assembly, Iowa's state legislature (Constitution of the State of Iowa, Article 3, §38A). While this has been done for a number of taxes, counties and municipalities presently do not have the authorization to tax income.

As income taxation by local governments has been cited as both a means to diversify revenue and provide property tax relief, this study aims to explore the relationship between income and property taxation at the municipal level. Specifically, the goal of this research is to discover whether the presence of income taxation is associated with lower property tax rates and less reliance upon property tax revenue for municipal governments that utilize it. This will be accomplished through an examination of municipalities in the state of Ohio, where municipal income taxation has been regulated statewide since 1957 (Ohio Department of Taxation, 2006). An emphasis will be placed on ensuring that the findings of this research are applicable to Iowa in the hope of developing an understanding of the potential effects of allowing municipal income taxation in the state.

A. Research Questions

This study will seek to answer the following questions regarding the relationship between income taxation and property taxation for municipalities in Ohio:

1. Do municipalities that tax income have lower property taxes than municipalities that do not tax income?

2. Are municipalities that tax income less dependent on property taxes as a revenue source than municipalities that do not tax income?

3. What would the likely effects on municipal property taxes be if Iowa were to adopt a municipal income tax structure similar to that in Ohio?

B. Hypotheses

Through this research and analysis, the following hypotheses will be tested:

1. Municipalities that tax income will have lower property taxes than municipalities that do not tax income.

2. Municipalities that tax income will be less dependent on property taxes as a revenue source than municipalities that do not tax income.

C. Operationalizing the Concepts

To further define the objectives of this study, elaboration on the terms of the research questions is necessary. To determine whether municipalities that tax income have lower property taxes than municipalities that do not, property taxes will be examined in terms of property tax rates for the three major classifications of property used by the state of Ohio; tangible property, residential/agricultural property, and commercial/industrial property (Ohio Department of Taxation, 2006a). Property tax levies will also be examined as a per capita measure for each municipality so as to provide a standardized metric to better assess their impact on individual taxpayers.

In examining whether municipalities that tax income are less dependent upon property taxes than municipalities that do not, dependency on property taxes will be stated in terms of a municipality's property tax revenue as a percentage of their general revenue, and as a percentage of their tax revenue, as reported to the United States Census Bureau (United States Census Bureau, 2008). This value should be thought of in relative terms; this study does not propose any absolute measure of a municipality's dependency on property taxes. Rather, a municipality will be said to be more dependent upon property taxes than another if property tax revenue comprises a greater share of general and tax revenue for that municipality.

To determine the likely effects on property taxes for municipalities in Iowa, the same above variables will be examined. However, rather than observing these variables across all available municipalities in Ohio, only select municipalities will be subject to study. These municipalities will be chosen from municipalities with available data through a stratified sample, the goal of which is to select only those municipalities which are most similar to municipalities in Iowa. Similarity will be based upon several demographic factors, such as total population and median household income. A fully detailed outline of the methodology used to obtain this sample will be presented later in this study.

D. Ohio Municipalities as the Unit of Analysis

Ohio municipalities were selected as the unit of analysis for this study for several reasons. The first and most important is that as of 2005, Ohio is one of

only ten states that presently allow local governments to tax income (Lohman, 2005). Of these ten states, in only five—Indiana, Maryland, Michigan, Ohio, and Pennsylvania—is local income tax widely used. In the other five states, local income tax is a tool that is either infrequently utilized or used only by the largest cities in the state. A study of such states would not enable the research to account for the effect of population size on the relationship between municipal income taxes and property taxes, and the findings would have little relevance to Iowa, where over 50% of cities have populations of 500 people or less, and under 5% of cities have populations of 8,000 or more (Iowa League of Cities, 2008).

Of the five states where local income taxation is widely used, two states—Indiana and Maryland—allow only counties to tax income. These two states were not considered for this study, as the focus of this research is to understand the relationship between income taxation and property taxation at the municipal level. Additionally, counties in these two states provide a different set of services than most counties in Iowa provide; this is especially true in Maryland, where counties often provide services to a large number of unincorporated places (Maryland Association of Counties, 2003). Further, in these two states, the number of counties that utilize income tax far outweighs the number of counties that do not, rending comparisons between the two difficult.

Pennsylvania allows both municipalities and school districts to tax income, which creates a research problem in that school district boundaries are not contingent with municipal boundaries; it is possible and likely that many

municipal boundaries contain multiple school districts. Because school districts do not all tax income at the same rate, nor do all of them tax income, this creates the potential for the combined income tax rate—the school district income tax rate plus the municipal income tax rate—to vary within municipalities (Lohman, 2005). This disparity could have distortionary effects on the dependent variables, and would be a difficult phenomenon to account for in the research design.

Michigan and Ohio are the only two states that allow only municipalities to tax income. Michigan requires cities to adopt the state's uniform municipal tax ordinance, and only 22 cities have done so (Lohman, 2005). This contrasts with Ohio, where there is both a large number of municipalities that have introduced income taxation (472), and a large number of municipalities that have not introduced income taxation (316). This balance is especially apparent for municipalities that have less than 5,000 people; a range in which 92% of Iowa's cities fall (Iowa League of Cities, 2008). For the above reasons, Ohio municipalities are the best suited subjects of this study.

E. Purpose of Study

The purpose of this study is twofold; it seeks to first develop an understanding of the relationships that exist between income taxation and property taxation at the municipal level, and to then extrapolate the likely impacts on Iowa municipalities from those findings. The impetus for this area of research arises from the significant amount of legislative interest that has been given to the topic in past years, especially in Iowa. There have been numerous undertakings

of the Iowa General Assembly with the purpose of providing a comprehensive assessment of Iowa's property tax structure, usually with the ultimate goal of providing some form of relief or reform (Crowley, 2007).

During the 2007 legislative session, the Iowa General Assembly authorized the formation of the Legislative Property Tax Study Committee, which is charged with preparing a comprehensive examination of the property tax structure in Iowa, placing an emphasis on developing a recommendation for the reduction of property taxes statewide. Directed to meet during the 2007 and 2008 legislative interims, the committee is scheduled to present a final report to the general assembly no later than January 5th, 2009 (Iowa General Assembly, 2007). Through the first three meetings of the 2007 legislative interim, statements made by members and the leadership of the committee, as well as by those presenting before the committee, indicate that enabling local governments to diversify their revenue sources, particularly through municipal income taxation, will be a highly considered recommendation.

As the prospect of municipal income taxation in Iowa will likely continue to exist as a possibility in future years, it is important to have an understanding of the potential effects that such a policy would create. In particular, the claim that introducing municipal income tax would serve as a form of property tax relief is one that deserves evaluation; should municipal income taxation become a reality in Iowa, it is highly probable that it would be implemented with the purpose of providing property tax relief.

Additionally, the research questions examined in this study are academically valuable, as methods of local government finance lie at the nexus of both planning and public administration as fields of study. One of the primary purposes of both planning and public administration is to encourage and foster economic growth and development. For Iowa in particular, economic development strategy is often manifested with strategies designed to encourage businesses and individuals to locate within the state (Iowa Department of Economic Development, 2007). A commonly decried barrier to this is that local governments in Iowa do not have a competitive advantage over those in surrounding states in terms of attracting residents and businesses, in part due to relatively higher levels of property taxation (Bennett, 2007).

Further, the issue is important to local government officials in Iowa, many of whom feel that the lack of potential alternative revenue sources, such as municipal income taxation, restricts their ability to achieve the goal of diversifying a municipality's overall revenue composition. As a result, many municipal governments (particularly cities) feel that they are too heavily reliant upon property tax revenue as a means of financing the costs of government (Prosser, 2007). This is additionally burdensome due to a provision of Iowa law commonly referred to as the rollback (Iowa Code §441.21). Enacted in 1977, this policy has had the effect of limiting the growth in assessable value of residential properties, which has not only decreased the base value to which residential property taxes are applied, but has forced many local governments to shift the

property tax burden to other classes of property (Robinson, 2007). As such, the possible effects of introducing municipal income tax in Iowa are of high interest to local governments.

F. Definition of Terms

To fully understand the findings of this research, definitions of several key terms used in this study are provided as follows:

Assessed Value – The recognized value of a given property, as calculated by the appropriate assessing body. In Ohio, most property assessments are conducted by the County Auditor of the county in which the property is located.

General Revenue – This comprises all revenue except that classified as liquor store, utility, or insurance trust revenue. The basis for the distinction is the nature of the revenue source, not the fund or administrative unit established to account for and control particular activities (United States Census Bureau, 2002).

Income Tax Rate – The full rate at which an individual's taxable income is subject to taxation. The income tax rate is expressed as a percentage of an individual's taxable income (Ohio Department of Taxation, 2006).

Levy – The total amount of revenue generated by a particular tax or revenue source.

Municipality – In Ohio, any incorporated place established as a city or a village. A city is a municipality with a population greater than 5,000, while a village is a municipality with a population of 5,000 or less. Municipalities do not include townships or counties.

Property Tax Rate – The rate at which taxes are levied against the taxable value of a given property. Property tax rates are expressed in terms of mills, which is a value that represents the dollar amount of tax liability for every $1,000 of the assessed value for a given property (Ohio Department of Taxation, 2006).

Tax Revenue – Taxes are compulsory contributions exacted by a government for public purposes, other than for employee and employer assessments and contributions to finance retirement and social insurance trust systems and for special assessments to pay capital improvements. Tax revenue comprises gross amounts collected (including interest and penalties) minus amounts paid under protest and amounts refunded during the same period.

Taxable Income – The value of an individual's income that is subject to taxation. Taxable income is generally less than an individual's total income.

G. Organization of Thesis

This study is presented in five chapters. This chapter has served as an introduction to the concept, objective, and impetus of the research. The second chapter is an overview of the pertinent literature and research in the fields of both income taxation and property taxation at the municipal level. The second chapter also includes an analysis of the current income and property tax structures in Ohio municipalities, the subjects of this study. The third chapter is a detailed description of the methodology that will be used to answer the research questions presented and test the hypotheses proposed. The fourth chapter presents the findings derived by this methodology, as well as an analysis of them for each

research question. The fifth and final chapter serves to reiterate the major

findings and present guidance for future research on the topic.

II. LITERATURE REVIEW

To fully understand the impacts of both property and income taxation by local governments, it is necessary to discuss the theoretical underpinnings and history of each. This chapter is divided into three sections, each outlining the research, history, and theory surrounding the major topics that are vital to this study. Section A contains an overview of the income tax, with a focus on its application by local governments. In Section B, the property tax is discussed in similar fashion. Finally, Section C contains a summary of both income and property taxation by local governments in the state of Ohio, the subject of this research.

A. Income Tax

During the Great Depression, local income taxation began to generate significant interest as a means to diversify local government revenue sources. Local governments at the time were heavily reliant upon property taxation as a means of finance. The combined effect of declining property values and increased unemployment was increased demand on government services coupled with a declining revenue base. In response, many larger cities began imposing income taxation in order to offset the decreased revenues that resulted from this (Merriman, 1987). While initially a technique utilized only by larger cities, by the mid-1960s over 75% of municipalities that utilized local income tax had a population of less than 50,000 inhabitants (Deran, 1968). This was in response to several states enacting legislation that gave municipalities of this size the

authority to tax income, which was a power previously only granted to larger cities.

A second wave of cities enacting local income taxation occurred in the late 1960s and the 1970s in response to both increasing property tax rates and increased suburbanization. As metropolitan populations became decentralized and relocated along the urban fringe, outside of the municipal boundaries of many central cities, those cities adopted local income taxation as a means of extracting revenue from the displaced populations, many of whom still worked in the central city (Advisory Commission on Intergovernmental Relations, 1988).

As of 2005, ten states in the United States allowed income taxation by one or more types of municipalities within their boundaries. While in five of these states, only the very largest municipalities utilize income taxation, it is widely applied in most parts of the other five states. The five states where municipal income taxation is widely used are: Indiana, Maryland, Michigan, Ohio, and Pennsylvania (Lohman, 2005). Of those states, administration and collection of the income tax is the responsibility of individual municipalities, with the exception being Maryland, where the state government administers the tax. In Maryland and Indiana, taxes may be levied by counties but no other form of municipality (with the exception of municipalities within one county in Indiana). Pennsylvania allows income taxation by municipalities and school districts. Ohio and Michigan are the only two states that allow income taxation for only cities (termed villages in Ohio if the population is less than 5,000), and Michigan allows

only those cities which have adopted the state's uniform city income tax ordinance to tax income. As such, only 22 cities in Michigan have done so. Within Ohio, many cities and villages have income taxation with various rates, though the maximum rate without voter approval is 1%. Most cities in Ohio (municipalities with a population greater than 5,000) have some form of income taxation, whereas a sizeable portion of villages (municipalities with a population of less than 5,000) do not have income taxation.

In the 2002 United States Census of Governments, it is apparent that income taxation is a finance tool used primarily by state governments and not by local governments (Table II-A). Of the total income tax levied by both state and local governments, 91.25% was levied by state governments, as compared to only 8.75% by local governments. State governments also appear to be more reliant upon income taxes than do local governments, with income taxes comprising 39.38% of all tax revenue collected by states, and 28.98% of states' general revenue. This contrasts with income taxes consisting of only 5.46% of local governments' tax revenues, and 3.39% of local governments' general revenues (United States Census Bureau, 2002b).

Table II-A: State and Local Income Tax Revenue (in $1,000)						
	General Revenue Total	Tax Revenue Total	Income Tax Revenue Total	% of General Revenue	% of Tax Revenue	% of Total Income Taxes
State And Local	1,324,332,862	905,100,802	230,984,116	17.44%	25.52%	100.00%
State	727,194,230	535,191,161	210,769,710	28.98%	39.38%	91.25%
Local	597,138,632	369,909,641	20,214,406	3.39%	5.46%	8.75%

One of the chief arguments made by proponents of income taxation is that it is a relatively equitable source of revenue. First, an individual's current income is viewed as a significant and determinate indicator of their economic well-being; a tax on that income is therefore an accurate method of aligning an individual's tax burden with their ability to pay for the costs of government. Relying on the assumption that those individuals with a greater capacity to provide local government revenue should in fact be doing so, the income tax is effective to that end as it is, for most people, the single most reliable indicator of an individual's relative affluence (Mikesell, 1999).

Second, the income tax is viewed as equitable in that it can be easily adjusted to account for individual taxpayers' unique conditions. There are numerous factors which influence an individual's capacity to provide revenue to finance the operation of government, which sometimes creates vast differences in their ability to pay even if their current income levels are similar (Mikesell, 1999). These factors include, but are not limited to: geographic location, personal debts, family size and composition, other financial obligations, etc. These differences across individuals can be accommodated relatively easily through policy programs, such as rebates and tax credits, so that their tax burden is more closely aligned with their capacity to generate revenue (Mikesell, 1999).

Third, governments that utilize income taxation experience less pressure to make significant adjustments to their tax structures across time. While there will always be factors that force governments to revise their tax structure in order to

accommodate them, in general, this occurs much less frequently for governments that have forms of income taxation. This is largely because many government services are driven by population levels; since income tax revenues are closely proportional to population levels, changes in revenue derived from income taxation will be reflected by changes in population (and therefore the necessary level of services provided by government). Essentially, the income tax is elastic with respect to increased demand for government services, which reduces the need for governments to shift the burden for that increased demand onto other taxpaying entities or increase income tax rates themselves (Mikesell, 1999).

There is considerable theoretical support for two of the rationales for imposing local income tax being tested in this research; that it leads to diversification of the tax structure, and that it can be used as a method of property tax relief. One of the benefits claimed to be brought on by a diversified tax structure is that it reduces the sensitivity of overall municipal revenue to external factors, such as inflationary pressures, changes in the value of a tax base, and so forth (Misiolek, 1987). The result of this diversification is revenues that are more stable and predictable across time, as the changes in any single revenue source will have a less dramatic impact on the overall revenue collected.

Additionally, because the introduction of a new revenue source displaces a local government's reliance upon other revenue sources, the tax rates for those sources can be lowered to reduce possible distortion from high tax rates on any single source. The additional revenue generated by income tax would potentially

allow a local government to lower sales tax rates, for example, which could be displacing consumption and sales to other jurisdictions if the tax was unusually high (Advisory Commission on Intergovernmental Relations, 1988). Income tax could also be used to displace reliance upon property taxes, a tax which is often decried as in need of relief.

In fact, one of the chief claims being tested in this research is that local income tax acts to displace much of a local government's reliance upon property taxation for revenues. This was empirically supported by a 1968 study which found that cities with income taxation had lower property tax rates per capita than cities without income taxes, controlling for population (Deran, 1968). Not only did these cities exhibit smaller property tax rates capita, but the total combined tax burden from all sources was lower per capita for cities that had income taxation. Both of these findings held true across time; cities with income taxation had experienced smaller increases in both property taxes per capita and total tax burden per capita over a ten-year period at the time of the study. Of interesting notice is that while the reported findings reflected averages for the two sets of cities studied, individual cities with income taxation almost always displayed lower property and total taxes per capita than cities of similar population sizes, but without income tax. The exceptions were the very largest cities included in the study (Deran, 1968).

Though not through a direct study of the relationship between local income tax and local property tax rates, it was also discovered that cities preferred

diversified tax structures partially due to the reductive impact they had on property taxes (Merriman, 1987). However, there are few, if any, recent empirical studies that lend support to this assertion, which is a partial impetus for this research.

Income taxation is not without criticism, however. One critique frequently raised is that the income tax lacks transparency due to its relatively complicated structure of administration. A commonly held principle of public finance is that systems of taxation should be comprehendible; since so few understand income tax structures, this principle seems to be violated in most instances (Mikesell, 1999). Another argument against income taxation, and one that is especially pertinent to this research, is that it is relatively costly to administer (Mikesell, 1999).

Administrative costs are typically described as the costs associated with the enforcement, collection, and distribution of monies generated from a given tax. While there is great variance across jurisdictions in terms of the administrative costs involved with local income taxation, one of the key determining factors is the level of government at which the administration occurs. When income tax is administered locally, the significant overhead costs may result in relatively high administrative costs to revenue ratios. If a county, regional, or state level government administers the tax, or if local governments utilize a common collection agency, thus consolidating overhead costs with each

other, the administrative cost to revenue ratio can be significantly reduced (Meyer, 1977).

Income tax is also criticized for discouraging individual income savings, as saving increases the amount of individual income that is subject to taxation. Thus, the income tax can create a disincentive to save income if it is taxed at a higher rate than consumption, which many argue has negative policy implications. As such, shifting the tax burden from income to expenses and consumption is viewed to be an approach to increase individual savings (Howrey, 1978).

Another concern regarding local income taxation is the prospect of double taxation; the taxing of an individual's income by multiple local governments. While this occurs at the federal and state levels, it is viewed by many as more problematic when it occurs locally. Namely, this is because most local government services tend to uniquely benefit the residents of that jurisdiction (Sigafoos, 1953). Local governments that tax income vary in terms of what income is taxable; some tax only the income of individuals that reside within a jurisdiction, while others also tax the income of individuals that work within that jurisdiction. This creates the potential for double taxation for individuals who reside and/or work in multiple jurisdictions. This may occur frequently in metropolitan areas consisting of a central city and numerous suburbs, and generates equity and fairness concerns that may only be remedied through establishing one government as the exclusive recipient of tax revenue (Sigafoos, 1953).

A 1988 study found that there is a negative relationship between a city's income tax rates and the overall value of the property tax base for that city. Sampling 86 large cities in the United States and using data for multiple years, the study found that for every 10% increase in a city's income tax rate, the value of the existing property tax base can be expected to decrease by .7% (Ladd, 1988). While this could be construed as one of the negative implications brought about by local income tax, in a comparative sense, it may act as a positive attribute; the same study also found that increases in property tax rates have a greater negative impact on the overall property tax base than increases in the income tax rate. For every 10% increase in the property tax rate for a city, the existing property tax base can be expected to decrease by 1.5% (Ladd, 1988).

B. Property Tax

Property taxes can be levied upon either real or personal property; real property describes real estate, land, and any improvements to them, while personal property encompasses all non-real estate property (Mikesell, 1999). Personal property can be either tangible or intangible, though those terms vary in their definitions across taxing entities. Common tangible properties subject to taxation include automobiles and household items, while intangible property typically includes financial holdings such as stocks or bonds (Mikesell, 1999). Most local governments collect an overwhelming share of their property tax revenue from real property taxes, with many states exempting personal property from taxation entirely (Mikesell, 1999).

To distribute the property tax burden among property holders, most governments use a system of classification to categorize individual properties into specific property classes, with tax levy rates varying across these classes. Common classes of property may include residential, commercial, industrial, and agricultural property. There are often subclasses within each class, such as light industrial and heavy industrial within the industrial class. Individual properties are assessed within each class to determine a taxable value for that property, to which the tax rate is then applied to calculate its tax liability (Mikesell, 1999).

There are numerous methods of property assessment, and they vary according to the type of property being assessed and the jurisdiction in which the assessment occurs. Generally, however, most assessment methods fall into one of three categories: the market-data approach, the income approach, and the cost approach. The market-data approach is the most commonly used, and it involves estimating the value of a given property by comparing it to the value of similar properties recently sold on the open market (Mikesell, 1999). The income approach, which is commonly used to assess properties that are primarily used to generate income, such as agricultural and rental properties, is a formulaic approach to estimating the value of income that a given property will generate (Mikesell, 1999). The cost approach is the least common method, as it is designed to value properties that are inherently unique and lack comparable sales data required to perform an assessment using the market-data approach. With this

approach, properties are valued based on the estimated cost of replacing real estate located on the property (Mikesell, 1999).

Property tax is one of the oldest and most commonly used forms of taxation in the United States, and one that has been widely used by local governments as a means of finance. Though local governments are becoming predominantly less reliant upon property taxation as a revenue source, as recently as 1932 it accounted for 92.5% of all local government tax revenue (United States Census Bureau, 1935). Property tax revenue has long been the primary means of finance for local governments, despite predictions that it would cease to become so over time (Mikesell, 1993). For cities, property tax is the single largest revenue source, on average, for cities of any sized population (Mikesell, 1993). While it is acknowledged that local governments' reliance on property tax may decrease over time with the increased introduction of alternative revenue sources, such as sales taxation and user fees, local governments are likely to maintain property taxation and continue to draw a significant share of their revenue from it (Mikesell, 1993).

In the 2002 United States Census of Governments, property taxes are shown to be more heavily utilized by local governments than state governments (Table II-B). Of the total property tax levied by both state and local governments, 96.52% was levied by local governments, as opposed to only 3.48% by local governments. Local governments also appear to be more reliant upon property taxes than state governments, with property taxes comprising 72.85% of all tax

revenue collected by local governments, and 45.13% of local governments'

general revenue. This contrasts with property taxes consisting of only 1.81% of

state governments' tax revenues, and 1.33% of state governments' general

revenues (United States Census Bureau, 2002b).

Table II-B: State and Local Property Tax Revenue (in $1,000)						
	General Revenue Total	Tax Revenue Total	Property Tax Revenue Total	% of General Revenue	% of Tax Revenue	% of Total Property Taxes
State And Local	1,324,332,862	905,100,802	279,191,478	21.08%	30.85%	100.00%
State	727,194,230	535,191,161	9,702,385	1.33%	1.81%	3.48%
Local	597,138,632	369,909,641	269,489,093	45.13%	72.85%	96.52%

One argument in favor of property taxation is its stability as a revenue

source over time, on the whole, for local governments to rely upon. While

property taxes levied against individual properties can fluctuate with some

turbulence, the aggregate of all property tax revenues for most local governments

stays relatively stable when compared to other revenue sources (Mikesell, 1984).

This reliability produces a steady income stream for municipal budgets, a facet

that can have numerous advantages.

In terms of equity and fairness, the property tax is often supported on the

basis that it is a benefit tax; the benefits directly accrue to those paying for them.

Property tax revenues are often directed towards public developments and

infrastructure improvements that benefit the property owner by increasing the

value of their property beyond what that increase would be without the

improvements paid for by the tax (Ford, 1951). In addition, the value of property

owned by an individual is a measure of their affluence, and thus, their ability to pay for the costs of government. While this connection is not presently as strong as it has been historically, it remains a fairly accurate measure of individual affluence (Mikesell, 1993).

Property taxes are also supported by their entrenched nature, as they have been utilized widely and successfully for some time. An immediate abandonment of the use of property taxes would shift a local government's cost burden onto other revenue sources, thereby increasing rates for those sources. Because property tax currently comprises such a large share of local government revenue, this increase in tax rates on other revenue sources would likely be dramatic (Mikesell, 1993). Such a shift in tax structures seems unlikely, however, given that local governments' capacity to assess property accurately is increasing, thanks to technological advancements such as Geographic Information Systems (GIS) and improved database software (Soibelman, 2002).

One of the most frequently raised criticisms of property taxation is that the assessment practices used to value property are of poor quality and are responsible for the wide variance in assessed values across properties (Mikesell, 1993). These differences in assessments ensure that even similar properties taxed at the same rate can pay greatly different amounts of property tax.

A more pointed criticism of property assessment is that it often uses fractional assessment, which creates inequity across individual properties. Fractional assessment occurs when classes of property are valued less than their

market value, which is often required by statute. This system, which is critiqued

as lacking transparency, increases the likelihood that individual assessments will

be inequitable, as property owners are likely to be unaware of any over-

assessments of their property (Mikesell, 1999). Variance in fractional assessment

values themselves are a source of inequity; even as tax levy rates against a given

property remain fixed, differences in assessed value across individual properties

act to create differences in the effective property tax rate (Mikesell, 1999).

One of the ways in which the property tax is criticized as unfair to the

property owner is that property values themselves can fluctuate greatly over time,

often through no action of the property owner, which results in unpredictable and

possibly dramatic changes in property tax liability across time (Mikesell, 1993).

This impact can be especially pronounced for properties located at the urban

fringe, where new development often occurs. Property in these areas, which is

commonly low-valued agricultural land, can experience rapid increases in

valuations (Libby, 2001). While this can be partially remedied through zoning

policies and 'circuit breaker' programs, which have been adopted by several states

and provide tax credits to property owners that have properties experiencing value

increases above a specified threshold, the impact of a sudden and rapid property

value increase often outweighs the remedy (Indiana Department of Local

Government Finance, 2006).

Another criticism of property taxes is that they act to discourage

investment in real estate, which is an essential and desired component of

economic development. Development, improvement, and renovation of a given

property are likely to increase its assessable value, and thus, its property tax

liability (Mikesell, 1993). As such, property taxes act as a disincentive to

economic growth and development, and due to variation in property tax rates and

valuation methods across geographic areas, can disproportionately impact certain

municipalities. Evidence of the importance of property taxes to economic

development can be found in the methods that states use to encourage such

development; nearly all states provide some form of tax credit to developers in

order to counteract the impact of increased local property taxes that ensue from

development (Eisinger, 2002).

Property taxes are also widely criticized as a regressive tax, meaning that

the burden is carried at a disproportionately higher level by those with the lowest

ability to pay. This assumes that property values are intended to be a measure of

individual affluence. A 1974 study found that individual property taxes paid, as a

percentage of an individual's income, were higher among those with low incomes

than those with high incomes (Musgrave, 1974). Contextually, the property tax

may not be as regressive as other taxes commonly levied by local governments.

The state that is the subject of this research for example, Ohio, mandates that

municipal income taxes must be uniform across all income brackets (Ohio Code,

Chapter 718). This amounts essentially to a 'flat tax,' which is often criticized for

its regressive nature. However, whether a flat tax has a regressive impact can

vary according to numerous factors (Keen, 2006).

C. Income and Property Taxation in Ohio

The legislative foundation for municipal income taxation in Ohio is found in Chapter 718 of the state's Code, which is a result of the Uniform Municipal Income Tax Law Act of 1957 (Ohio Department of Taxation, 2006). Essentially, the law permits municipalities within Ohio to levy a tax on individual income, as defined by the Code of the Internal Revenue Service (Ohio Code, Chapter 718). The decision to impose such a tax is made locally by the municipality, which may set the rate as high as 1% without voter approval. Rates in excess of 1% may be adopted subject to the popular vote of the residents of the municipality. All municipalities, regardless of the rate they use, must apply that rate uniformly across all income strata. By default, all revenue generated from the income tax is deposited in the municipality's general fund, though specific portions may be earmarked for items such as tax administration, capital improvement projects, or bond retirement (Ohio Code, Chapter 718). The tax is administered and collected locally by the municipality that enacts the tax. The tax may be paid in equal quarterly installments. Other than a 1987 amendment which exempted all intangible personal income from taxation, there have been few amendments that have drastically altered the language of the legislation. These amendments have primarily exempted certain types of income from taxation, such as military pay and stock options, none of which comprise a large share of total taxable income (Ohio Code, Chapter 718).

The overall structure of the legislation lends to the validity of this study in that it does not allow for any major irregularities across the municipalities observed. As of 2005, 558 municipalities have enacted local income tax, which yields an initially large sample frame. Across those municipalities, the tax rates ranged from a low of .30% to a high of 3%, which, coupled with the 1% rate limit without voter approval, results in tax rates that are fairly similar across municipalities (Ohio Department of Taxation, 2006). As revenues generated are deposited into a municipality's general fund by default, it enables for comparison across municipalities, as each municipality in Ohio has a general fund. Further, as there have been few significant changes to the means by which municipal income tax is collected across time, and since those changes do not appear to uniquely impact any particular municipality or municipalities, there are likely few differences across municipalities that are a result of the legislation itself.

Title 57 of the Ohio Code contains the state rules and regulations guiding property taxation in the state. All real property owners in the state are subject to taxation, unless they are specifically exempted by statute. Real property is defined as land and improvement to land, the taxable assessed value of which comprises the real property tax base (Ohio Code, Chapter 5713). For nearly all classes of land, taxable value is limited to 35% of the actual value of a given property (Ohio Code, Chapter 5715). Specific exemptions from property taxation, both by the state and local governments, include schools, charities, churches, and several other governmental and private institutional organizations.

Agricultural property values, like many Midwestern states, are determined

formulaically according to the current productivity of a given property (Ohio

Code, Chapter 5709).

Property tax levy rates must be applied uniformly within a given property

class. Two rates must be calculated and reported by county assessors within the

state; a gross rate and an effective rate. The gross rate represents the total

property tax rate levied by all taxing districts on a given property prior to the

application of numerous tax reduction factors. The effective rate represents this

value subsequent to the application of these factors (Ohio Code, Chapter 309).

Assessments must be completed and submitted to the state Tax Commissioner for

approval and equalization at the appropriate time in the assessment cycle (Ohio

Code, Chapter 323). Once valuation factors and levy rates are approved, county

auditors are responsible for the application of all pertinent taxes, as well as the

collection of revenue. Once local administrative fees have been deducted,

revenue is distributed among the various municipalities, townships, school

districts, and special districts according to the tax rates levied against the taxable

value of each taxing entity (Ohio Code, Chapter 321). Currently, all property

taxes levied in Ohio are distributed among local governments, as the state does

not collect any property tax revenue (Ohio Department of Taxation, 2002).

Municipalities in Ohio presently levy property taxes on real property only;

beginning in 2005, personal property, such as machinery and vehicles, is no

longer subject to property taxation within the state. The resulting revenue

shortfalls experienced by local governments, who had previously utilized this revenue source as a method of finance, are offset with reimbursements from the state government. This period of reimbursement is scheduled to conclude after tax year 2017, and will be phased out over the years between 2011 and 2017 (Mullen, 2006).

Ohio largely replicates the pattern seen for the United States as a whole regarding income and property taxation by level of government; local governments are largely reliant upon property taxes, while the state government is financed primary through income taxation (Table II-C). In the 2002 United States Census of Governments, income tax comprised 30.23% of Ohio's general revenue and 41.41% of Ohio's total tax revenue; the single largest source for both categories. Property tax accounted for only .07% of Ohio's general revenue and .09% of its total tax revenue. In contrast, local governments as a whole for all levels, which includes counties, municipalities, school districts, and special districts, generated 44.04% of their general revenue and 66.26% of their total tax revenue from property taxes. This compares with 14.33% of their general revenue and 21.57% of their total tax revenue from income tax. Within local governments, municipalities (cities and villages) in Ohio exhibit a reversal in the pattern seen for local governments as a whole. Municipalities generate only 11.38% of their general revenue and 18.23% of their total tax revenue from property tax, while 46.21% of their general revenue and 74.01% of their total tax revenue is generated by income tax. This explains that while local governments

levy 99.83% of property taxes in Ohio, municipalities only levy 7.64% of all

property taxes paid in the state. Conversely, while local governments only levy

29.32% of all income taxes paid in Ohio, municipalities levy 28% of all income

taxes in the state. The 1.32% difference is attributable to minor income taxes

levied by school and special districts, as counties are not authorized to levy

income taxes; hence their reliance upon property taxes (United States Census

Bureau, 2002c).

Table II-C: Ohio State and Local Revenue (in $1,000)				
	General Revenue Total	Tax Revenue Total	Income Tax Revenue Total	Property Tax Revenue Total
State And Local (All local)	51,704,415	36,165,190	11,793,667	10,643,420
State	27,577,760	20,130,415	8,335,554	18,498
Local	24,126,655	16,034,775	3,458,113	10,624,922
Local (Municipal)	7,145,627	4,461,830	3,302,050	813,193

To further enhance the examination of differences in property tax levels

and property tax dependency between municipalities with income taxation and

municipalities without income taxation in Ohio, it is pertinent to outline some of

the key demographic traits of Ohio municipalities. Specifically, it is useful

compare these traits to the same traits for Iowa municipalities, such that one of the

goals of this analysis is to estimate the impact of allowing Iowa municipalities to

tax income. Contrasts between municipalities in the two states could be helpful in

explaining that estimated impact, and as such, it is useful to present them.

As a whole, Ohio is more populous than Iowa, though the populations of

both states share similar characteristics when compared to the United States as a

whole (Table II-D). Both Ohio and Iowa are older on average than the United

States as a whole, since the median age is lower in each state than the national

median age. Ohio's median age is 36.2 (United States Census Bureau, 2000).

Iowa has a median age of 36.6 (United States Census Bureau, 2000a). Similarly,

the portion of the population aged 65 and above is greater in both Ohio and Iowa

than it is for the United States as a whole, with that percentage being 13.3% for

Ohio and 14.9% for Iowa.

The percentage of individuals below the poverty level is similar for both

Ohio and Iowa, and both display figures for this trait that are below the

percentage of individuals below the poverty level for the United States as a whole.

However, both Ohio and Iowa have median household incomes that are lower

than the median household income for the United States as a whole. Additionally,

the difference between the Ohio's median household income and the national

household income is less than the difference between Ohio's median household

income and Iowa's median household income, revealing that Ohio's median

household income is not only greater than Iowa's, but by a sizeable amount as

well.

Table II-D: Demographic Comparisons			
Trait	Ohio	Iowa	U.S.
Total Population	11,353,140	2,926,324	---
Median Age	36.20	36.60	35.3
% Population Aged 65+	13.30%	14.90%	12.40%
Median Household Income	$40,956	$36,469	41,994
% Individuals below Poverty Level	10.60%	9.10%	12.40%

III. RESEARCH METHODOLOGY

The purpose of this study is to answer whether municipalities with income taxation have lower property taxes and are less dependent upon property tax revenue than municipalities without income taxation. Additionally, this research aims to provide an understanding of the potential impact that allowing municipalities in Iowa to tax income would have in terms of property taxation. This is accomplished through a study of municipalities in Ohio, a state where there is a relative balance between the number of municipalities with income tax and the number of municipalities without income tax. This section describes in detail the methodology that is utilized to arrive at the answers to the research questions posed in this study.

A. Data and Information

The data required to perform this study was compiled from a variety of sources. As this study takes the form of a cross-sectional analysis, time series data is not utilized, with all information being collected for select years. The first step in compiling the data was to gather a list of Ohio municipalities and the pertinent demographic information associated with them. This information was readily accessible from the United States Census Bureau with the data being collected during the 2000 Census of the United States (United States Census Bureau, 2000). For each municipality, the following information was compiled: total population, median age, median household income, and the urban percentage of the total population. This data was selected due to its potential impact on both

municipal income and property taxation, as each can play a significant role in the set of services provided by a municipal government. For example, municipalities with larger populations often provide services that are not considered cost efficient for municipalities with smaller populations, such as waste disposal and utility provision.

The income tax rate and property tax rates for all property classes were collected for each municipality, as well as the total value of property within each municipality. This information was obtained from the Ohio Department of Taxation, which collects this information annually through a survey of municipalities. The data displays the tax rates used for the most recently available year, 2006 (Ohio Department of Taxation, 2008). There were 12 municipalities that did not provide this information to the Ohio Department of Taxation for that year, and as such, they are excluded from this study.

Finally, information regarding municipalities' revenue composition was compiled from the United States Census Bureau. This information contains the total income tax revenue, total property tax revenue, total tax revenue, and total general revenue for each municipality in Ohio (United States Census Bureau, 2002a). Information was collected from the 2002 United States Census of Governments, which is the most recently available year. Data is available for all municipalities in Ohio.

Because there is a four year difference between the 2002 income tax revenue information from the United States Census of Government and the 2006

income tax rate information provided by the Ohio Department of Taxation, there

are some municipalities that do not have available income tax revenue

information, yet have an income tax rate. Conversely, there are municipalities

that have income tax revenue information, but do not have an income tax rate.

This is presumably because those municipalities either adopted or repealed

income taxation within that time frame, or did not provide the information during

the 2002 United States Census of Governments. As such, they are excluded from

this study.

B. Research Design

From the collected information, the hypotheses presented in this study are

tested through a comparison of selected variables across municipalities, in

addition to a regression analysis. For the comparative analysis, municipalities

will be first divided into two groups: those with income tax, and those without

income tax. Property tax rates and property tax dependency will then be

compared across each of the groups. Further, to provide a comprehensive

understanding of the various factors that may also influence property tax levels

and property tax dependence other than income tax rates, municipalities will be

divided into quartiles for each of the following ranges: total population, median

household income, total taxable value of property, total general revenue, and total

general revenue from sources other than income and property tax. Within each

quartile, municipalities with income tax will be compared to municipalities

without income tax in terms of property tax levels and dependency on property

taxes. Differences in property tax levels and property tax dependency will also be measured across municipalities with income tax within similar ranges of the income tax rate itself.

These quartile ranges were selected because of the potential impact that differences in the variables measured could have on property tax levels and property tax dependency. For example, municipalities in the uppermost quartile range of median household income could presumably be less dependent upon property taxation than municipalities in the lowest quartile range for that variable, as the income tax base could be larger. Comparing the dependent variables across these quartile ranges will expose any differences in the dependent variable across the quartile ranges, warranting further examination into potential causality.

Additionally, a regression analysis will be performed on the set of municipalities, aimed at determining the strength of the relationship between income tax rates and the numerous dependent variables used to measure a municipality's property tax rates and property tax dependency.   This will be completed using Statistical Analysis System (SAS) software. For each dependent variable, a model will be constructed that treats the income tax rate, total population, median age, median household income, percentage urban population, total taxable value of property, total general revenue, and the percentage of general revenue from sources other than income and property tax as explanatory variables. These variables were chosen for their plausible impact on the

independent variables. A 95% confidence level will be used to test the variables in each model.

Further, to provide an understanding of the impacts that allowing municipalities within Iowa to tax income would have, a stratified sample of Ohio municipalities will be selected, designed to be demographically similar to municipalities in Iowa. This will be accomplished by first establishing the range of population for all Iowa municipalities, as well as the range of median household income values for municipalities in Iowa with data available from the 2000 United States Census. These ranges will then be applied to the set of municipalities with available data for Ohio; municipalities that fall outside of these ranges will be excluded from the study.

After the set of cities is narrowed by the above method, all Iowa municipalities will be stratified into fixed population ranges and the portion of all Iowa municipalities that fall within each of these ranges will be calculated. The ranges that will be used, as well as the number and percentage of Iowa cities that fall within them, are presented below (Table III-A). These ranges were selected for use in this study as they are used by the Iowa League of Cities to classify cities within Iowa by population (Iowa League of Cities, 2008). Ohio municipalities with income tax will then be stratified into the same population ranges, as will Ohio municipalities without income tax. From the resulting two sets of Ohio municipalities, a stratified sample of 41 municipalities will be drawn from each group, with the percentage of the total sample in each stratum

corresponding to the percentage of all Iowa municipalities within that stratum. For example, because 50.74% of Iowa municipalities have a population of less than 500 people, approximately 50.74% of the municipalities in each sample of Ohio municipalities will have populations of less than 500 people. The total sample size of 41 was chosen for each group because there is only one municipality in Ohio without income tax that is in the upper stratum (population of 8,000+), which needs to comprise 4.64% of the sample size. Municipalities will then be selected randomly from the strata, and the same data that will be compared across the quartile ranges discussed above will be compared across the resulting groups.

Table III-A: Iowa Cities Population Ranges		
Iowa Population Ranges	% of Cities Within Range	# of Cities Within Range
0-499	50.74%	481
500-1,999	32.81%	311
2,000-7,999	11.81%	112
8,000+	4.64%	44

C. Limitations of Study

In addition to describing the focus areas of this research, it is also important to note its limitations. While the study hopes to further understand the relationship between income and property taxes at the municipal level, it is not within the scope of examination to establish a direct causal effect between the two variables. The list of factors influencing both a municipality's property tax level and their property tax dependency is nearly unlimited, and it would be nearly

impossible to tease out all of them in this research. Alternately, the goal of this research is to examine the differences in property tax levels and property tax dependency across municipalities according to whether they utilize income tax; depending on the findings, those differences may warrant further research into the causal relationships between variables.

Additionally, if property tax levels are found to be lower for municipalities with income tax than for municipalities without income tax, one possible explanation would be that income taxes were instituted as a response to low property tax levels. Low property tax levels could have the effect of limiting a municipality's available revenue, thus increasing the need for additional revenue and resulting in the imposition of an income tax. The task of determining whether this has occurred is also beyond the scope of this research, as it would require identifying the date on which income taxes were introduced for each municipality, and examining the relative property values for the municipality at that time.

Also, the research methodology does not address the potential influence of the administrative costs associated with collecting municipal income tax on the dependent variables. It is plausible that differences in administrative costs, which likely vary according to numerous factors, are responsible for some of the variation in property tax levels and property tax dependency across municipalities. However, as the information necessary to complete an examination of this factor is not readily available, a concerted effort would be required to obtain the information.

Finally, this study does not explore any of the possible impacts of time on the dependent variables examined. As a cross-sectional analysis, the question of the effect of municipal income tax across time is not examined in this research. While this does not significantly impinge on the first two research questions proposed, it may have implications on the transferability of the findings to Iowa. Were Iowa to adopt income taxation at the municipal level, this study does not indicate any timeline regarding the when the expected impact would be experienced by municipalities with income tax.

Also, it is important to not that the findings of this study may not be applicable to municipalities of all populations sizes; specifically, the findings are based on information available primarily for municipalities of 5,000-8,000 people or less, and may not represent the relationship between income and property tax for municipalities larger than this. This limitation is not a result of the methodology or research design, but arises because there are only four municipalities in Ohio with a population greater than 5,000 people and do not utilize property tax, and only one municipality with a population greater than 8,000 people without income tax. As such, the findings should be viewed as most valid for those municipalities at the lower end of the population size spectrum.

IV. RESULTS AND FINDINGS

This section serves to describe in detail the results and findings of the research conducted. It is divided into three sections—one for each of the three research questions raised in this study. The first section discusses whether municipalities that tax income have lower property taxes than municipalities that do not tax income. The second section examines whether municipalities with income taxation are less dependent upon property taxes than municipalities that do not tax income. The third and final section discusses the findings generated by a stratified sample of Ohio municipalities constructed to be demographically similar to municipalities in Iowa, as a whole.

A. Research Question 1 – Do municipalities that tax income have lower property taxes than municipalities that do not tax income?

To explore this question, the first step of the analysis was to segregate all municipalities into two groups; those that have income tax, and those that do not. It was then possible to compare selected variables across the two groups with the available data. The variables chosen for comparison to answer this question are: tangible property tax rate, residential/agricultural property tax rate, commercial/industrial property tax rate, and the total property tax levy per capita. This data was obtained from the Ohio Department of Taxation for fiscal year 2006, with the property tax levy per capita calculated by dividing the total

property tax levy for each municipality by its population according to the 2000

United States Census (United States Census Bureau, 2000).

Of the 788 municipalities for which there is complete data, 472 of them

utilized municipal income taxation, while 316 did not. For the group with income

taxation, the average property tax rate for all three classes of property is lower

than the corresponding average tax rate for municipalities without income

taxation (Table IV-A). The difference is greatest between the two groups for the

tangible property tax rate, with an average rate of 6.47 mills for municipalities

with income tax as compared to an average rate of 8.08 mills for municipalities

without income tax. The difference is smallest between the two groups for the

residential/agricultural rate, with an average rate of 5.35 mills for municipalities

with income tax, as compared to an average rate of 6.09 mills for municipalities

without income tax.

In terms of the total property tax levy per capita, it is higher on average for

municipalities with income tax than for municipalities without income tax. For

municipalities with income tax, the average total property tax levy per capita is

$107.01, while it is $88.66 for municipalities without income taxation. One

possible explanation for this is that while property tax rates are lower for

municipalities with income taxation, on average, the average base value of the

property might be higher than the average base value of property for

municipalities without income taxation. This possibility will be further explored

in subsequent analyses.

Table IV-A: All Municipalities				
All Municipalities (N=788)	Tangible Tax Rate (Mills)	Residential/Ag Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)
Average	7.11	5.65	6.07	98.85
Min	0.10	0.10	0.10	0.00
Q1	3.25	3.00	3.10	32.80
Med	6.02	4.73	5.09	59.68
Q2	9.96	7.31	7.98	103.12
Max	38.52	30.37	33.43	3021.66
Municipalities with Income Tax (N=472)	Tangible Tax Rate (Mills)	Residential/Ag Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)
Average	6.47	5.35	5.72	107.01
Min	0.10	0.10	0.10	0.00
Q1	3.13	2.98	3.09	40.82
Med	5.21	4.30	4.68	69.82
Q2	8.74	6.72	7.29	124.76
Max	38.52	30.37	33.43	1706.44
Municipalities without Income Tax (N=316)	Tangible Tax Rate (Mills)	Residential/Ag Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)
Average	8.08	6.09	6.60	86.66
Min	0.30	0.30	0.30	0.00
Q1	3.61	3.00	3.20	24.87
Med	7.10	5.26	5.87	46.26
Q2	11.50	8.04	8.80	81.82
Max	26.90	20.41	21.32	3021.66

The Effect of Population

To better understand the impact that differences in population might have

on the relationship between municipal income tax and property taxes, all 788

municipalities were ordered by their population according to the 2000 United

States Census, low to high, and stratified into quartiles (United States Census

Bureau, 2000). Within each quartile, municipalities with income taxation were

compared to municipalities without income taxation across the same variables as the above analysis (property tax rates for each property class, and property tax levy per capita).

Property tax rates for all classes are lower on average for municipalities with income taxation than for municipalities without income taxation for all quartiles (Table IV-B). Additionally, the difference in average rates for each class seems to increase along with the quartiles. For example; in the lowest population quartile range, municipalities with income taxation have an average tangible property tax rate of 4.17 mills as opposed to an average tangible property tax rate of 6.43 mills for municipalities without income taxation. In the highest population quartile range, municipalities with income tax have an average tangible property tax rate of 6.9 mills, while municipalities without income tax have an average tangible property tax rate of 15.3 mills.

The effect of population on the average property tax levy per capita across the two types of municipalities is less clear, however. The average property tax levy per capita is lower for municipalities with income tax than it is for municipalities without income tax in the 1st, 3rd, and 4th quartiles, but it is higher in the 2nd quartile. Excluding the 2nd quartile, there is a pattern of increasing differences, as well as increasing overall values, in the average property tax levy per capita between the two types of municipalities in each successive quartile.

Though not addressed specifically by the research questions of this study, an interesting observation is that while most municipalities in the lower two

quartiles do not have income taxation, most municipalities in the upper two

quartiles do have income taxation. It is beyond the scope of this study to

speculate as to the causes of this phenomenon, however.

Table IV-B: Municipalities by Population					
Average by Population Quartiles (Low to High)	Tangible Tax Rate (Mills)	Residential/Ag Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)	N
Q1 Range: 49-453					
Q1 With I. Tax	4.17	3.29	3.50	54.15	19
Q1 Without I. Tax	6.43	4.91	5.29	82.89	182
Q2 Range: 454-1,469					
Q2 With I. Tax	5.61	4.63	5.02	120.11	87
Q2 Without I. Tax	10.04	7.37	8.10	78.66	106
Q3 Range: 1,470-6,678					
Q3 With I. Tax	6.67	5.24	5.72	95.19	172
Q3 Without I. Tax	11.03	8.66	9.16	138.49	26
Q4 Range: 6,679-711,470					
Q4 With I. Tax	6.90	5.97	6.25	116.79	194
Q4 Without I. Tax	15.30	12.76	12.31	180.71	2

The Effect of Median Household Income

The differences between municipalities with income tax and

municipalities without income tax can be further explained by comparing them

within similar ranges of their median household income. This was accomplished

by ordering all municipalities by 2000 median household income as provided by

the United States Census Bureau, and comparing municipalities with income tax

to those without within each quartile of the range (United States Census Bureau,

2000).

Average property tax rates for each class of property are lower for

municipalities with income taxation than municipalities without income taxation

for each quartile range (Table IV-C). While the differences in average property

tax rates between the two types of municipalities become smaller with each

successive quartile for the tangible property class, this pattern is not clearly shown

for the other two classes of property. Additionally, average property tax rates do

not increase or decrease consistently across the quartiles.

With the exception of the 1st quartile, the average total property tax levy

per capita is higher for municipalities with income taxation than municipalities

without income taxation. Further, this difference in average total property tax

levy per capita increases with successive quartiles. For example; municipalities

with income tax in the 2nd quartile have an average total property tax levy per

capita of $92.83, as opposed to $83.46 for municipalities without income taxation.

In the 4th quartile, municipalities with income tax have an average total property

tax levy per capita of $153.10, while municipalities without income tax have an

average total property tax levy of $124.12. Overall, total average property tax

levy per capita increases with median household income for both types of

municipalities.

The value of average household income seems to have some effect on

whether a municipality has income taxation. While municipalities with income

tax outnumber municipalities without income tax in each quartile, the percentage

of total municipalities in each quartile that have income tax increases as median

household income increases. This suggests that municipalities with higher

median household income levels may be more likely to have income tax than

those with lower median household income levels.

Table IV-C: Municipalities by Median Household Income					
Average by Median Household Income Quartiles (Low to High)	Tangible Tax Rate (Mills)	Residential/Ag Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)	N
Q1 Range: 16,932-32,084					
Q1 With I. Tax	6.21	5.44	5.72	74.12	101
Q1 Without I. Tax	8.60	6.40	7.06	91.48	96
Q2 Range: 32,085-37,796					
Q2 With I. Tax	7.00	5.48	6.01	92.83	119
Q2 Without I. Tax	8.66	6.02	6.61	83.46	78
Q3 Range: 37,797-45,349					
Q3 With I. Tax	6.10	4.95	5.32	96.16	116
Q3 Without I. Tax	7.29	5.77	6.12	55.83	81
Q4 Range:45,350-200,001					
Q4 With I. Tax	6.52	5.51	5.79	153.10	136
Q4 Without I. Tax	7.55	6.13	6.48	124.12	61

The Effect of Total Taxable Value of Property

To better understand the differences between municipalities with income

tax and municipalities without income tax across varying total taxable values of

all property in each municipality, all 788 municipalities were ordered by their

total taxable value of all property. The information required to do this was

obtained from the Ohio Department of Taxation, and reflect values for fiscal year

2006 (Ohio Department of Taxation, 2008). Once municipalities were ordered by

this value, they were separated into quartiles, and municipalities with income tax

were compared to those without income tax for each quartile.

Average property tax rates for each class are lower for municipalities with

income taxation than they are for municipalities without income taxation in each

quartile (Table IV-D). Additionally, the average property tax rate for each class increases as the total value of property increases for both municipalities with income tax and municipalities without income tax. The exception is municipalities without income taxation in the 4th quartile, for which average property tax rates decrease from the levels present in the 3rd quartile. As there are only two municipalities without income taxation in this quartile, however, this may not be a valid finding.

The effect on average total property tax levy per capita is that municipalities with income tax have higher average property tax levies per capita than municipalities without income tax for all quartiles, with the exception of the 1st quartile. While there are no clear patterns of change in the average total property tax levy per capita as the total value of property increases across all quartiles, the average total property tax levy per capita decreases for municipalities with income tax when moving from the 1st quartile to the 2nd quartile, and increases for municipalities without income taxation.

Of interest is that for the lower two quartiles, the number of municipalities without income tax is much larger than the number of municipalities with income tax. Assuming that municipalities without income tax are also more reliant upon property taxes—the second hypothesis tested in this study—this implies that municipalities with lower total property values, and thus a lower overall property tax base, are more likely to be dependent upon that base for revenue.

Table IV-D: Municipalities by Total Value of Property

Average by Total Value of Property Quartiles, in $1,000 (Low to High)	Tangible Tax Rate (Mills)	Residential/ Ag Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)	N
Q1 Range: 436.92-5,289.00					
Q1 With I. Tax	5.05	3.99	4.35	80.36	18
Q1 Without I. Tax	7.02	5.29	5.77	48.39	179
Q2 Range: 5,289.01-24,793.78					
Q2 With I. Tax	5.92	4.64	5.14	60.05	91
Q2 Without I. Tax	9.12	6.68	7.28	70.96	106
Q3 Range: 24,793.79-171,421.94					
Q3 With I. Tax	6.61	5.25	5.69	90.55	169
Q3 Without I. Tax	10.62	8.80	9.13	372.22	29
Q4 Range:171,241.95-16,702, 224.90					
Q4 With I. Tax	6.74	5.89	6.14	145.85	194
Q4 Without I. Tax	10.10	7.50	7.59	203.49	2

The Effect of Total General Revenue

To explore the differences between municipalities with income taxation and municipalities without income taxation across different levels of their total general revenue, all municipalities were ordered by this amount, low to high, and placed into quartiles. The value of total general revenue, as defined by the United States Census Bureau, represents the total amount of revenue collected by a municipality, with revenue from few sources excepted. The information required to accomplish this was provided by the United States Census Bureau from the 2002 Census of Governments (United States Census Bureau, 2002a). Differences in the pertinent variables were then compared across the two types of municipalities within each quartile.

Again, average property tax rates for all classes of property are lower for municipalities with income tax than municipalities without income tax for all

quartiles (Table IV-E). Average property tax rates increase for all classes as total general revenue increases, with the exception of the 4th quartile. In the 4th quartile, municipalities without income tax display lower average property tax rates for each class when compared to municipalities without income tax in the 3rd quartile. However, as there are only two municipalities without income tax in the 4th quartile, this may not be a valid finding.

Regarding the average total property tax levy per capita, there is no identifiable pattern present across the quartile range. Municipalities with income tax have lower average total property tax levy per capita values than municipalities without income tax in the 2nd and 3rd quartiles, but have higher average total property tax levy per capita values in the 1st and 4th quartiles.

Table IV-E: Municipalities by Total General Revenue					
Average by Total General Revenue, in $1,000 Quartiles (Low to High)	Tangible Tax Rate (Mills)	Residential/Ag Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)	N
Q1 Range: 2-224					
Q1 With I. Tax	4.68	3.58	4.01	46.24	11
Q1 Without I. Tax	6.98	5.21	5.64	44.87	186
Q2 Range: 225-1,322					
Q2 With I. Tax	5.74	4.41	4.92	57.97	95
Q2 Without I. Tax	9.26	6.90	7.55	116.29	103
Q3 Range: 1,323-7,973					
Q3 With I. Tax	6.66	5.33	5.77	113.45	172
Q3 Without I. Tax	11.21	9.22	9.71	272.53	25
Q4 Range: 7,974-1,283,815					
Q4 With I. Tax	6.76	5.92	6.16	128.76	194
Q4 Without I. Tax	9.90	7.80	7.82	124.71	2

The Effect of the Percentage of Total General Revenue from Other Sources

The percentage of a municipality's total general revenue from sources other than income and property tax arguably plays a role in property tax rates and the total property tax levy per capita, so to further understand its impact, all municipalities were ordered, low to high, by the percentage of their total general revenue obtained from other sources and placed into quartiles. This information was obtained from the United States Census Bureau, and collected via the 2002 Census of Governments. The percentage of total general revenue was calculated for each municipality by adding the revenue collected from income tax and the revenue collected from property tax for each municipality and subtracted from that municipalities total general revenue. The resulting value was then displayed as a percentage of the municipality's total general revenue.

For all quartile ranges, average property tax rates for each class of property were lower for municipalities with income taxation than they were for municipalities without income taxation (Table IV-F). While average property tax rates do not increase or decrease according to any apparent pattern across quartiles, property tax rates for both municipalities with income tax and municipalities without income tax are both highest in the 1st and 2nd quartiles, respectively.

Of the several methods above in which municipalities have been categorized, grouping them by the percentage of total general revenue from other

sources is the only one in which the average total property tax levy per capita is lower for municipalities with income taxation than municipalities without income taxation for all quartiles. In this instance, however, this is not a provocative finding; municipalities with lower percentages of their total revenue from sources other than income and property taxes should, by definition, have higher property tax levies per capita than municipalities with higher percentages of their total revenue from other sources. This explains why average total property tax levy per capita values decrease for each increasing quartile, as well as why it is lower for municipalities with income taxation.

Table IV-F: Municipalities by % of Total General Revenue from Other Sources					
Average by % of Total General Revenue from Other Sources Quartiles (Low to High)	Tangible Tax Rate (Mills)	Residential/Ag Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)	N
Q1 Range: 10.10-55.28					
Q1 With I. Tax	8.18	6.65	7.16	164.11	173
Q1 Without I. Tax	10.44	7.98	8.77	241.42	25
Q2 Range: 55.29-69.62					
Q2 With I. Tax	5.42	4.50	4.79	80.03	162
Q2 Without I. Tax	11.59	8.55	9.38	165.61	34
Q3 Range: 69.63-86.47					
Q3 With I. Tax	5.51	4.72	5.00	71.91	113
Q3 Without I. Tax	8.94	6.60	7.02	89.66	84
Q4 Range: 86.48-100.00					
Q4 With I. Tax	5.79	4.66	4.96	42.78	24
Q4 Without I. Tax	6.62	5.09	5.53	47.33	173

Effect of the Income Tax Rate

To better understand the impact of the value of the income tax rate on property tax levels for municipalities, all municipalities with income tax were separated into categories depending on their income tax rate. The categories used

were: under 1%, 1-1.49%, 1.5-2%, and over 2%. The differences in average

property tax rates and the average property tax levy rate per capita were then

compared across municipalities within each category.

While average property tax rates for all classes were lowest for

municipalities with income tax rates of less than 1% and highest for

municipalities with income tax rates above 2%, the middle two ranges do not

display a continuation of this pattern, except for the average

residential/agricultural property tax rate (Table IV-G). This property tax rate

increased with each successive category of income tax rates. The impact on the

average property tax levy per capita also appears to be unclear; it is higher for

municipalities with income tax rates under 1% and over 2% than it is for

municipalities with income tax rates between 1% and 2%.

Table IV-G: Municipalities by Income Tax Rate				
Income Tax Rate	Tangible Tax Rate (Mills)	Residential/Ag. Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)
Under 1 (N=16)				
Average	5.94	4.27	4.93	115.99
Min	0.96	0.96	0.96	23.57
Q1	3.06	2.71	2.79	33.24
Med	5.45	3.69	4.11	89.56
Q2	8.50	5.30	6.71	107.73
Max	15.40	10.00	11.00	706.12
Income Tax Rate	Tangible Tax Rate (Mills)	Residential/Ag. Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)
1-1.5 (N=196)				
Average	6.22	4.97	5.39	97.37
Min	0.10	0.10	0.10	0.00
Q1	2.90	2.80	2.87	37.11

Table IV-G: Municipalities by Income Tax Rate (continued)			
Med	5.30	4.27	4.62	58.80
Q2	6.22	4.97	5.39	97.37
Max	28.23	17.50	20.65	1706.44

Income Tax Rate	Tangible Tax Rate (Mills)	Residential/Ag. Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)
1.5-2 (N=152)				
Average	5.77	4.98	5.21	90.63
Min	0.69	0.69	0.70	7.53
Q1	3.20	3.10	3.18	42.07
Med	4.30	3.99	4.06	66.04
Q2	5.77	4.98	5.21	90.63
Max	38.52	30.37	33.43	443.51

Income Tax Rate	Tangible Tax Rate (Mills)	Residential/Ag. Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	Property Tax Levy per Capita ($)
Over 2 (N=108)				
Average	7.98	6.71	7.13	146.23
Min	0.30	0.30	0.30	0.00
Q1	3.50	3.50	3.50	50.87
Med	6.90	5.74	6.30	102.71
Q2	7.98	6.71	7.13	146.23
Max	28.33	22.91	25.53	1370.62

Regression Models

In order to understand the combined effect of the presence of income tax and its rate, as well as numerous other factors on the variables used to measure property tax levels, a multiple regression analysis was performed with the available data. Regression models were created for each of the following dependent variables: tangible property tax rate, residential/agricultural property tax rate, commercial industrial property tax rate, and the property tax levy per

capita. Each model contained the following independent variables for each

municipality: income tax rate, total population, median age, median household

income, percentage urban population, total taxable value of property, total general

revenue, and the percentage of general revenue from sources other than income

and property tax. A 95% confidence level was used to test the variables in the

model.

The findings of this analysis reveal that the income tax rate is not a

significant predictor of property tax levels (Table IV-H). The coefficients for the

income tax rate as an independent variable are positive when treating the property

tax rate as a dependent variable for all classes of property, yet it yields large P-

values; .41 when the tangible property tax rate is the dependent variable, .2173

when the residential/agricultural property tax rate is the dependent variable, and

.2951 when the commercial/industrial property tax rate is the dependent variable.

The income tax rate is also not demonstrated to be a significant predictor

of the total property tax levy per capita for municipalities. When treating the total

property tax levy per capita as the dependent variable, income tax exhibits a

negative coefficient in the model with a P-value of .1164. As income tax was

larger than the alpha level of .05 for all dependent variables, income tax is not

shown to be a significant predictor of them. Detailed regression model output can

be found in Appendix A.

Table IV-H: Regression Analysis		
Dependent Variable	Parameter Estimate of Income Tax Rate	Pr > F for Income Tax Rate
Tangible Property Tax Rate	0.12881	0.41
Residential/Ag Tax Rate	0.33956	0.2173
Commercial/Industrial Tax Rate	0.25402	0.2951
Property Tax Levy Per Capita	-17.56077	0.1164

Analysis

Hypothesis: *Municipalities that tax income will have lower property taxes than*

municipalities that do not tax income.

While the regression models are unable to establish that the value of the

municipal income tax rate is significantly related to lower property taxes, there is

compelling evidence suggesting that municipalities with income taxation have

lower property tax rates for all classes of property than municipalities without

income taxation, on average (Table IV-A). This holds true when comparing

municipalities of like populations (Table IV-B), median household incomes

(Table IV-C), total value of property (Table IV-D), total general revenue (Table

IV-E), and percentage of total revenue from other sources (Table IV-F). Though

the presence and value of income tax rate is unable to be established as a

significant causal factor in these differences, the finding that property tax rates for

all classes of property are lower on average for municipalities with income tax

than for municipalities without income tax lends support to this hypothesis.

However, this hypothesis is not supported by the finding that for municipalities with income taxation, the total property tax levy per capita was higher than in municipalities without income taxation, on average (Table IV-A). While this is not true in all instances, such as when comparing the two types of municipalities within the lowest quartile of population range (Table IV-B), the overall findings are inconclusive to support the hypothesis. They do, however, warrant a further examination into the relationship between municipal income tax and property taxes per capita.

B. Research Question 2 – Are municipalities that tax income less dependent on property taxes as a revenue source than municipalities that do not tax income?

This question was answered using the same set of municipalities in Ohio that was used to answer the first research question, separated by whether the municipality used income taxation. A municipality's dependency on property taxation is measured in this research by the percentage of their total general revenue and their total tax revenue that consists of property tax revenue. As noted, there is no threshold for dependency. Rather, it is a relative measure; a given municipality is said to be more dependent upon property tax revenues if these two metrics are higher than they are for comparative municipalities. The data required for this comparison was obtained from the United States Census Bureau's 2002 Census of Governments, which provided the absolute values of general revenue, tax revenue, and property tax revenue for all available

municipalities in Ohio (United States Census Bureau, 2002a). From this information, the appropriate percentages were calculated and used for the comparison.

The group containing all municipalities with income taxation (N=472), both the percentage of general revenue and the percentage of tax revenue from property taxes is smaller on average than for the group containing all municipalities without income taxation (N=316). The average percentage of general revenue from property taxes is 9.44% and the average percentage of tax revenue from property taxes is 21.9% for municipalities with income tax (Table A2). This contrasts with an average percentage of general revenue from property tax of 17.75% and an average percentage of tax revenue from property tax of 80.89% for municipalities without income taxation.

Additionally, the range in these values is smaller for municipalities with income taxation. The percentage of general revenue from property tax ranges from a low of 0% to a high of 44.99% for municipalities with income tax, as compared to a range of 0% to 89.90% for municipalities without income tax. For the percentage of tax revenue from property tax, this range is 0% to 82.61% for municipalities with income tax, as compared to 0% to 100% for municipalities without income tax.

Table IV-I: All Municipalities		
All Municipalities (N=788)	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax
Average	12.77%	45.56%
Min	0.00%	0.00%
Q1	4.48%	14.78%
Med	8.64%	31.24%
Q2	16.67%	84.03%
Max	89.90%	100.00%
Municipalities with Income Tax (N=472)	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax
Average	9.44%	21.90%
Min	0.00%	0.00%
Q1	3.96%	11.39%
Med	6.87%	17.84%
Q2	12.69%	29.52%
Max	44.99%	82.61%
Municipalities without Income Tax (N=316)	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax
Average	17.75%	80.89%
Min	0.00%	0.00%
Q1	6.51%	71.19%
Med	12.47%	92.10%
Q2	22.97%	100.00%
Max	89.90%	100.00%

The Effect of Population

To better understand the differences in municipalities' dependency on property taxation across municipalities with and without income tax of similar population sizes, the same quartile ranges used above were used for this analysis. Doing so displays that both the average percentage of general revenue from property tax and the average percentage of tax revenue from property tax is lower

for municipalities with income tax than municipalities without income tax in each

quartile range (Table IV-J). There does not appear to be any linear trend between

population size and the value of these variables. However, for municipalities

without income taxation in the 2nd and 3rd quartiles, both the average percentage

of general revenue from property tax and the average percentage of tax revenue

from property tax are lower than in the 1st and 4th quartiles.

Table IV-J: Municipalities by Population			
Average by Population Quartiles (Low to High)	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax	N
Q1 Range: 49-453			
Q1 With I. Tax	6.53%	18.30%	19
Q1 Without I. Tax	18.22%	82.31%	182
Q2 Range: 454-1,469			
Q2 With I. Tax	8.66%	25.32%	87
Q2 Without I. Tax	15.92%	79.93%	106
Q3 Range: 1,470-6,678			
Q3 With I. Tax	8.96%	21.45%	172
Q3 Without I. Tax	20.29%	74.19%	26
Q4 Range: 6,679-711,470			
Q4 With I. Tax	10.49%	21.13%	194
Q4 Without I. Tax	38.63%	89.54%	2

The Effect of Median Household Income

To further examine the differences in municipalities' dependency on

property taxation between municipalities with income tax and municipalities

without income tax of similar median household income values, the quartile

ranges used to examine the effect of median household income above are used to

explore this question. For each quartile, the average percentage of general

revenue from property tax and the average percentage of tax revenue from

property tax are smaller for municipalities with income tax than for municipalities without income tax (Table IV-K).

Table IV-K: Municipalities by Median Household Income			
Average by Median Household Income Quartiles (Low to High)	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax	N
Q1 Range: 16,932-32,084			
Q1 With I. Tax	7.87%	20.30%	101
Q1 Without I. Tax	17.92%	80.86%	96
Q2 Range: 32,085-37,796			
Q2 With I. Tax	9.11%	23.01%	119
Q2 Without I. Tax	16.56%	77.33%	78
Q3 Range: 37,797-45,349			
Q3 With I. Tax	8.87%	20.82%	116
Q3 Without I. Tax	17.68%	83.83%	81
Q4 Range:45,350-200,001			
Q4 With I. Tax	11.37%	23.05%	136
Q4 Without I. Tax	19.11%	81.59%	61

The Effect of Total Taxable Value of Property

To explore whether the total taxable value of property in a municipality has any impact on differences property tax dependency between municipalities with income taxation and municipalities without income taxation, municipalities were ordered by their total taxable value of property and placed into quartiles. When the differences between municipalities with income taxation and municipalities without income taxation are observed within each quartile, dependency on property taxes is greater for municipalities without income taxation in each quartile (Table IV-L). This is evidenced by both the average percentage of general revenue from property tax and the average percentage of tax revenue from property tax being smaller for municipalities with income tax than

for municipalities without income tax in each quartile. Beyond this finding, the only identifiable trend is that for municipalities with income taxation, the average percentage of general revenue from property tax increases with each successive quartile. This is also true for municipalities without income tax, if the 1st quartile is excluded.

Table IV-L: Municipalities by Total Value of Property			
Average by Total Value of Property Quartiles, in $1,000 (Low to High)	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax	N
Q1 Range: 436.92-5,289.00			
Q1 With I. Tax	6.79%	20.04%	18
Q1 Without I. Tax	17.05%	83.00%	179
Q2 Range: 5,289.01-24,793.78			
Q2 With I. Tax	7.81%	24.43%	91
Q2 Without I. Tax	16.43%	79.17%	106
Q3 Range: 24,793.79-171,421.94			
Q3 With I. Tax	8.73%	21.60%	169
Q3 Without I. Tax	25.66%	73.93%	29
Q4 Range:171,241.95-16,702, 224.90			
Q4 With I. Tax	11.06%	21.15%	194
Q4 Without I. Tax	35.66%	84.42%	2

The Effect of Total General Revenue

For further examination of the differences in property tax dependency between municipalities with income tax and municipalities without income tax, all municipalities were ordered by the value of their total general revenue and placed into quartile ranges. Property tax dependency was then compared across the two types of municipalities within each quartile. When this is done, both the average percentage of general revenue from property tax and the average percentage of tax revenue from property tax are smaller for municipalities with

income tax than for municipalities without income tax in every quartile (Table IV-M). An identifiable difference across quartiles is that the average percentage of tax revenue from property tax decreases with each successive quartile for municipalities without income tax. This is also true of municipalities with income tax, if municipalities in the 1st quartile are excluded.

Table IV-M: Municipalities by Total General Revenue			
Average by Total General Revenue, in $1,000 Quartiles (Low to High)	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax	N
Q1 Range: 2-224			
Q1 With I. Tax	8.47%	20.18%	11
Q1 Without I. Tax	19.44%	83.91%	186
Q2 Range: 225-1,322			
Q2 With I. Tax	8.65%	24.71%	95
Q2 Without I. Tax	14.93%	79.20%	103
Q3 Range: 1,323-7,973			
Q3 With I. Tax	9.69%	22.88%	172
Q3 Without I. Tax	16.36%	67.12%	25
Q4 Range: 7,974-1,283,815			
Q4 With I. Tax	9.65%	19.76%	194
Q4 Without I. Tax	22.96%	59.05%	2

The Effect of the Percentage of Total General Revenue from Other Sources

In gaining a better understanding the differences in property tax dependency across the two categories of municipalities created in this study, all municipalities were ordered by the percentage of their total general revenue obtained from sources other than property and income tax. They were then grouped into quartiles, and the differences in property tax dependency were observed between municipalities with income tax and municipalities without

income tax within each quartile. Doing so again shows that municipalities with
income tax are less dependent on property taxation than municipalities without
income taxation in each quartile, measured by the average percentage of general
revenue from property taxes and the average percentage of tax revenue from
property taxes (Table IV-N). As expected, the average percentage of general
revenue from property tax decreases for both types of municipalities with each
successive quartile. However, this trend is not evident with the average percent of
tax revenue from property tax, for either type of municipality. This implies that
while municipalities with higher percentages of their total general revenue from
sources other than income and property tax are less dependent upon property
taxes, the phenomenon may be attributable to the presence of not only income tax,
but any number of other revenue sources not recognized as tax revenue by the
United States Census Bureau.

Table IV-N: Municipalities by % of Total General Revenue from Other Sources			
Average by % of Total General Revenue from Other Sources Quartiles (Low to High)	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax	N
Q1 Range: 10.10-55.28			
Q1 With I. Tax	13.97%	22.87%	173
Q1 Without I. Tax	58.72%	95.28%	25
Q2 Range: 55.29-69.62			
Q2 With I. Tax	8.37%	20.39%	162
Q2 Without I. Tax	37.08%	89.50%	34
Q3 Range: 69.63-86.47			
Q3 With I. Tax	5.51%	22.56%	113
Q3 Without I. Tax	19.75%	81.02%	84
Q4 Range: 86.48-100.00			
Q4 With I. Tax	2.41%	22.07%	24
Q4 Without I. Tax	7.06%	77.06%	173

Effect of the Income Tax Rate

To better understand the impact of the value of the income tax rate on municipalities' property tax dependency, all municipalities with income tax were separated into categories depending on their income tax rate. The categories used were: under 1%, 1-1.49%, 1.5-2%, and over 2%. The differences in average percentage of general revenue from property tax and the average percentage of tax revenue from property tax were then compared across municipalities within each category.

From the differences across the different income tax rate categories, there does not appear to be any linear trend between the value of the income tax rate and the average percentage of general revenue from property tax or the average percentage of tax revenue from property tax (Table IV-O). For municipalities with income tax rates between 1.5% and 2%, both the average percentage of general revenue from property tax and the average percentage of tax revenue from property tax is lower than the corresponding values for municipalities with income tax rates between 1% and 1.49%, and higher than the corresponding values for municipalities with income tax rates greater than 2%. For municipalities with income tax rates under 1%, the average percentage of general revenue from property tax is lower than that value for municipalities with income tax rates between 1 and 1.49%, but the average percentage of tax revenue from property tax is higher.

Table IV-O: Municipalities by Income Tax Rate

Income Tax Rate	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax
Under 1 (N=16)		
Average	9.15%	31.93%
Min	1.69%	7.31%
Q1	5.42%	17.12%
Med	7.85%	21.98%
Q2	12.19%	49.25%
Max	21.53%	72.00%

Income Tax Rate	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax
1-1.5 (N=196)		
Average	9.26%	24.49%
Min	0.00%	0.00%
Q1	3.89%	12.95%
Med	6.80%	20.37%
Q2	9.26%	24.49%
Max	44.51%	82.61%

Income Tax Rate	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax
1.5-2 (N=152)		
Average	8.37%	18.55%
Min	0.92%	4.23%
Q1	4.00%	10.40%
Med	6.38%	14.42%
Q2	8.37%	18.55%
Max	44.99%	57.10%

Income Tax Rate	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax
Over 2 (N=108)		
Average	11.31%	20.45%
Min	0.00%	0.00%
Q1	3.91%	8.74%
Med	9.22%	16.18%
Q2	11.31%	20.45%
Max	43.29%	65.78%

Regression Models

To develop an understanding of the combined effect of the presence of income tax and its rate, as well as numerous other factors on the variables used to measure property tax dependency of municipalities, a multiple regression analysis was performed with the available data. Two regression models were created, treating the percentage of general revenue from property tax as the dependent variable in one, and treating the percentage of tax revenue from property tax as the dependent variable in the other. Each model contained the following independent variables for each municipality: income tax rate, total population, median age, median household income, percentage urban population, total taxable value of property, total general revenue, and the percentage of general revenue from sources other than income and property tax. A 95% confidence level was used to test the variables in the model.

The findings of these models demonstrate that the income tax rate is a significant determinant of both the percentage of general revenue from property tax and the percentage of tax revenue from property tax, and can also play a substantial role in reducing the value of the dependent variable (Table IV-P). The income tax rate displays a P-value of .0001 in the model treating the percentage of general revenue from property tax as the dependent variable, the coefficient is -.032 (-3.2%). Alternately, for every one unit increase in the value of the income tax rate (an increase of 1%), the percentage of general revenue from property tax is 3.2% lower.

In treating the percentage of tax revenue from property tax as the

dependent variable, the income tax rate exhibits a P-value of .0005 and a

coefficient of -.06 (-6%). This indicates that for every one unit increase in the

value of the income tax rate (an increase of 1%), the percentage of tax revenue

from property tax is 6% lower. Because the P-value for income tax as an

independent variable was below the predetermined alpha of .05 for both models, it

is significant in both. Detailed regression model output can be found in Appendix

A.

Table IV-P: Regression Analysis		
Dependent Variable	Parameter Estimate of Income Tax Rate	Pr > F for Income Tax Rate
% of General Revenue from Property Tax	-0.03203	0.0001
% of Tax Revenue from Property Tax	-0.05992	0.0005

Analysis

Hypothesis: *Municipalities that tax income will be less dependent on property*

taxes as a revenue source than municipalities that do not tax income.

The findings generated by this research are sufficient to support this

hypothesis. The metrics used to measured dependency—the percentage of a

municipality's general revenue from property taxes and the percentage of a

municipality's tax revenue from property taxes—are lower on average for

municipalities with income tax than for municipalities without income tax (Table

IV-J). This is also true when comparing municipalities of like populations (Table IV-K), median household incomes (Table IV-L), total value of property (Table IV-M), total general revenue (Table IV-N), and percentage of total revenue from other sources (Table IV-O). Though this fining was somewhat expected by definition, as municipalities that have income taxation presumably utilize it for the purpose of diversifying their revenue sources, this study supports the hypothesis that municipalities with income tax are less dependent upon property taxes than municipalities without income tax.

Further, the regression models used demonstrate that the relationship between income tax rates and the two dependent variables used to measure property tax dependency is significant. The P-values for income tax as an independent variable are below the alpha of .05 for both models, and the values of the coefficients indicate that the relationship between income tax rates and property tax dependency is negative. However, though a significant negative relationship was discovered, the extent of the impact that income tax rates may have on property taxation may be limited in practical application. As Ohio mandates that the maximum allowable income tax rate without voter approval is 1%, and the maximum income tax rate for any municipality in Ohio is 3%, the expected decrease in a municipality's property tax dependency may be limited by those bounds.

C. Research Question 3 – What would the likely effects on municipal property taxes be if Iowa were to adopt a municipal income tax structure similar to that in Ohio?

To best answer this question with the available information, a stratified sample of all Ohio municipalities was generated with the intention of creating a set of municipalities that is similar to municipalities in Iowa as a whole. This was accomplished by establishing the range of population for all Iowa municipalities, as well as the range of median household income values for municipalities in Iowa with data available from the 2000 United States Census. These ranges were then applied to the set of municipalities with available data for Ohio; municipalities that fell outside of this range were excluded from the study. For example, Columbus, Ohio was excluded because its population of 711,470 is greater than the maximum municipal population in Iowa; Des Moines, with a population of 199,002. Similarly, the largest median household income for any municipality in Iowa is $89,522; Ohio municipalities with median household incomes greater than this were excluded.

After the set of cities was narrowed by the above method, all Iowa municipalities were stratified into fixed population ranges and the portion of all Iowa municipalities that fell within each of these ranges was calculated. For example, 481 of Iowa's 948 municipalities, or 50.74%, have populations between 0 and 499. Ohio municipalities with income tax were then stratified into the same population ranges, as were Ohio municipalities without income tax. From the

resulting two sets of Ohio municipalities, a stratified sample of 41 municipalities was drawn from each group, with the percentage of the total sample in each stratum corresponding to the percentage of all Iowa municipalities within that stratum. For example, because 50.74% of Iowa municipalities have populations of less than 500, approximately 50.74% of the municipalities in each sample of Ohio municipalities have populations of less than 500. The total sample size of 41 was chosen for each group because there is only one municipality in Ohio without income tax that is in the upper stratum, which needs to comprise 4.64% of the sample size. Municipalities were then selected randomly from the strata, and findings were compared across both samples.

For the sample of municipalities with income tax, average property tax rates are lower for all classes of property when compared to the sample of municipalities without income tax (Table IV-Q). Additionally, the average property tax levy per capita for municipalities with income tax is $73.43, as opposed to $79.67 for municipalities without income tax. Municipalities with income tax also display less dependency on property taxes than the sample of municipalities without income tax, on average. The average percentage of general revenue from property tax is 8.01% for municipalities with income tax, compared to 19.77% for municipalities without income tax. Municipalities with income tax exhibit 20.09% as an average percentage of tax revenue from property tax, while this is 75.65% for municipalities without income tax.

Table IV-Q: Stratified Samples of Ohio Municipalities							
	Tangible Tax Rate (Mills)	Residential/Ag Tax Rate (Mills)	Commercial/ Industrial Tax Rate (Mills)	% of General Revenue from Property Tax	% of Tax Revenue from Property Tax	Property Tax Levy per Capita ($)	N
Sample-With I. Tax							
Avg	4.90	3.70	4.14	8.01%	20.09%	73.43	41
Sample-Without I. Tax							
Avg	7.52	5.65	6.23	19.77%	75.65%	79.67	41

Analysis

As the stratified sample was designed to examine the overall effect of municipal income taxation on municipalities that are most demographically similar to those in Iowa, the findings of this sample can be said to be potential impacts for Iowa municipalities if they were to adopt income taxation. Overall, those findings suggest that the anticipated effect would in fact be a reduction in property tax rates. As Iowa's property classifications and tax rate structure are not the same as Ohio's, it is beyond the scope of this study to suggest which property classes would observe the greatest reduction in rates. However, as rates were lower on average for all classes of property in Ohio municipalities with income tax, it can be assumed that a decrease in property tax rates in Iowa is a potential impact.

The impact of municipal income taxation on the property tax levy per capita is less clear, however. While the sample of municipalities with income tax displayed lower average property levy per capita values than municipalities without income tax, the difference was not substantial. Further, this was not the

case when comparing all Ohio municipalities with income tax to all Ohio municipalities without income tax. Thus, this finding is not well explained by this study, and warrants further examination.

The sample of municipalities with income tax was also less dependent upon property taxes than the sample of municipalities without income tax, as measured by the average percentage of general revenue from property taxes and the average percentage of tax revenue from property taxes. These differences were large as well, lending credence to the claim that local governments that use income taxation generate a smaller share of their revenue from property taxation.

V. CONCLUSIONS

So long as Iowa's property tax structure remains as it presently is, there will likely be continued calls for its reform. Among those reforms will be enabling local governments to diversify their revenue sources through the introduction of an income tax. The findings of this research suggest that doing so would, through the increased revenue that it would generate, serve to enable local governments to reduce property tax levels, and thus their dependence upon property taxes as a means of financing the cost of government.

This is evidenced first by the finding that property tax rates for all classes of property in Ohio are lower for municipalities with income tax than for municipalities without income tax. The regression analysis did not uncover a firm causal relationship between the presence and value of the income tax rate and property tax levels. However, the finding that property tax rates for municipalities with income tax were lower than municipalities without income tax, regardless of various demographic and governmental differences, suggests that there is a relationship between income tax and property tax levels.

Additionally, this research suggests that there is a negative relationship between income tax and a municipality's dependence upon property taxation. This is first demonstrated by the finding that municipalities with income tax derive a lower percentage of both their general and tax revenue from property tax than municipalities without income tax, on average, regardless of various demographic and governmental differences. This is further supported by the

regression analysis, which found that income tax was a significant factor in explaining the variation in property tax dependency across municipalities. The values of the coefficients for income tax in the regression models also show that it can have a substantial impact on property tax dependency.

One finding that is not explained by this research that warrants further examination is that property tax levels per capita were higher on average for municipalities with income tax than for municipalities without income tax, despite the finding that property tax rates were also lower for those municipalities. This is contrary to the hypotheses presented in this study and conflicts with the findings regarding property tax rates. A possible explanation may lie in the relationship between the total taxable value of property per capita in a municipality and property tax rates, which was not examined in this thesis.

An alternative explanation that is partially substantiated by the findings of this study is that the population of a municipality has a significant impact on the property tax levy per capita in that municipality. Namely, a municipality is more likely to utilize income taxation as its population increases; as municipalities with larger populations also display higher median household income values and higher total property values, it should be expected that the total property tax levy per capita will be higher for these municipalities as well. This is supported to an extent through the stratified sample of Ohio municipalities designed to be demographically similar to Iowa municipalities. Within the sample, which excludes both the wealthiest and largest municipalities in Ohio in terms of median

household income and total population, total property tax levy per capita is lower

for municipalities with income taxation than for municipalities without taxation.

This is in keeping with the hypotheses stated in this research, though is contrary

to the census of all Ohio municipalities, including those that were excluded from

the stratified sample.

Another interesting finding not explained by this study is that

municipalities at the lower end of the spectrum of total taxable value of property

were less likely to have income taxes. As these municipalities also tend to be at

the lower end of the population spectrum, a possible explanation may exist in an

examination of the administrative costs associated with taxing income at the

municipal level. It is possible that administrating municipal income tax has

overhead costs that exist regardless of the size of the taxable population in a

municipality, and municipalities would only be willing to tax their income if the

generated revenue exceeds the value of the overhead costs. A comprehensive

examination into the effect of the income tax's administrative costs in explaining

property tax levels and property tax dependency would be warranted, also, by its

plausibly significant role in this area.

Further exploration into the rationale for individual Ohio municipalities'

adoption of income taxation may yield results that explain several of the above

phenomena. A possible explanation for property tax levels being lower for

municipalities with income tax is that they were already at these levels prior to the

adoption of income tax. This would extinguish the possibility of a causal

relationship, and could explain why income tax was imposed; if the property tax rates used generated insufficient amounts of revenue, local officials may have opted to adopt an income tax rather than increase property tax rates in order to increase revenue. This would require an extensive examination, which was beyond the scope of this study. However, for a complete understanding of the relationship between income and property tax at the municipal level, it may be necessary.

Additionally, it would likely be beneficial to further explore the combined effects of a number of the variables used in the regression analyses and to compare municipalities across. It is possible that the combined impact of two or more of these variables is more effective in explaining variation in the dependent variables tested here. For example, if total population and median household income are combined to form an index number, differences in that value across municipalities may better explain their variations in property tax levels and property tax dependency than total population or median household income would alone. In addition, this would reduce some of the redundancy associated with comparing property tax levels and dependency across municipalities according to certain factors such as total population and total value of property. As the total value of property in a municipality is largely driven by total population, municipalities in the two sets are likely collinear, so comparing differences in property tax levels and dependency across them yields similar results.

Also, further study into the effects of municipal income tax over time is required to fully understand the impact of allowing it in a state that presently does not utilize it, such as Iowa. Examination of the economic impacts of municipal income taxation, such as the effect on workforce relocation, is also required to provide a more comprehensive assessment. While this research may outline a potential scenario for the effects of municipal income tax in Iowa, it assumes that such variables do not have an effect on a municipality's property tax levels and dependency on property taxes.

Finally, in keeping with pragmatism, it is valuable to pay heed to the realities of the political implications associated with allowing municipalities to tax income. In Iowa, and likely many other states as well, providing municipalities with such authority would necessarily be the result of action by the state legislature, which may be reluctant to do so. A likely concern of that body would be ensuring that municipalities would not adopt income taxation as a means to circumvent state collection of tax revenue, instead collecting and spending that revenue locally. One method of mitigating this concern would be to place limits on the amount of income that can be taxed locally, such as in Ohio, where a municipality may only impose a maximum income tax rate of 1% without the approval of the electorate. Another concern likely to be raised is that allowing municipalities to tax income could be perceived as burdensome to taxpayers; this could be avoided by effectively demonstrating that the introduction of income taxation is likely to be coupled with a reduction in property tax rates and levies.

These are but a few of the concerns that would be generated by a proposal to allow municipalities within a given state to tax income, and for such a proposal to become policy requires that those concerns are addressed appropriately and effectively.

For future research into this topic, an approach that would be valuable in explaining several of the findings that did not support the stated hypotheses, as well as in developing a further understanding of the relationship between income and property taxation at the municipal level would be to reframe the study using an alternate research question. A research design that aims to explore the questions of how municipalities with income taxation differ from those without income tax and what factors account for those differences could explain why, for instance, the total property tax levy per capita was higher on average for municipalities with income tax than for municipalities without income tax, a finding that was contrary to the hypotheses presented here.

A preliminary comparison of municipalities in Ohio with income taxation to those in Ohio without income taxation reveals that there are notable demographic differences between the two types of municipalities (Table V-I). On average, municipalities that tax income are both larger and wealthier than municipalities without income taxation in terms of population, median household income, and total value of property. As stated previously, there are numerous factors that could account for this differential, such as the costs of administering the income tax; the overhead costs that exist independent of population may be

large enough such that the marginal benefit of taxing income is enough to offset those costs only when the population of a municipality breaches a certain threshold. Future research seeking to explain what factors account for this differential between the two types of municipalities is warranted in that it would contribute greatly to the understanding of the relationship between income and property taxation at the municipal level.

Table V-I: Demographic Comparison of Ohio Municipalities by Income Tax Presence		
Trait	Municipalities with Income Taxation	Municipalities without Income Taxation
Average Population	14,581	766
Average Median Age	36.74	36.54
Average Median Household Income	42,818	38,555
Average Total Value of Property	$ 325,759,052	$ 15,364,339

Nevertheless, this research served to accomplish its goal of examining the differences in municipal property tax levels and property tax dependence between municipalities with income tax and those without it. The greatest contribution of this study is not the establishment of a causal relationship between the presence of income taxation and lower property tax levels and dependency at the municipal level, but is rather a demonstration that it is in fact possible for municipalities to survive and function with decreased levels of property tax if income tax is utilized. While many of the differences are supported by the findings of this study, many are left ambiguous and require further examination. As this is a topic that will likely be of interest to public officials, policymakers at all levels of government, and citizens alike, additional research into this important area should be encouraged.

APPENDIX A

SAS Multiple Regression Output

Model 1: Dependent Variable=Tangible Property Tax Rate (Pr>F =.0001)			
Independent Variable	*Parameter Estimate*	*Standard Error*	*Pr > F*
Intercept	7.10872	2.50208	0.0024
Total Population	0.000003384	0.000002742	0.1089
Median Age	0.05684	0.05528	0.1522
Median Household Income	-0.00000256	0.00001265	0.4198
% Urban Population	0.69091	0.57283	0.1142
Income Tax Rate	0.12881	0.56587	0.4100
Total Value of Property	-2.21E-09	9.89E-10	0.0129
Total General Revenue	0.00000712	0.00000788	0.1833
% of Total General Revenue from Other Sources	-5.41996	1.44648	0.0001
Model 2: Dependent Variable=Residential/Agricultural Property Tax Rate (Pr>F =<.0001)			
Independent Variable	*Parameter Estimate*	*Standard Error*	*Pr > F*
Intercept	4.26147	1.91995	0.0135
Total Population	0.00002991	0.00002104	0.0671
Median Age	0.05848	0.04242	0.0844
Median Household Income	0.00000372	0.00000971	0.3511
% Urban Population	0.73908	0.43956	0.0467
Income Tax Rate	0.33956	0.43422	0.2173
Total Value of Property	-1.98E-09	-7.59E-10	0.0047
Total General Revenue	0.00000731	0.00000605	0.1138
% of Total General Revenue from Other Sources	-3.72266	1.10994	0.0005
Model 3: Dependent Variable=Commercial/Industrial Property Tax Rate (Pr>F =<.0001)			
Independent Variable	*Parameter Estimate*	*Standard Error*	*Pr > F*
Intercept	5.36346	2.08431	0.0052
Total Population	0.0000344	0.00002284	0.0664
Median Age	0.05855	0.04605	0.1021
Median Household Income	0.00000167	0.00001054	0.4372
% Urban Population	0.6447	0.47719	0.0887
Income Tax Rate	0.25402	0.47139	0.2951
Total Value of Property	-2.17E-09	8.24E-10	0.0044
Total General Revenue	0.00000739	0.00000656	0.1304
% of Total General Revenue from Other Sources	-4.45763	1.20496	0.0001

SAS Multiple Regression Output (continued)

Model 4: Dependent Variable=Total Property Tax Levy Per Capita (Pr>F =<.0001)

Independent Variable	Parameter Estimate	Standard Error	Pr > F
Intercept	25.76749	64.97053	0.3459
Total Population	-0.00094244	0.00071196	0.0931
Median Age	6.37505	1.43542	<.0001
Median Household Income	0.00114	0.00032849	0.0003
% Urban Population	-9.75274	14.87444	0.2562
Income Tax Rate	-17.56077	14.69384	0.1164
Total Value of Property	1.02E-08	2.57E-08	0.3455
Total General Revenue	0.0004496	0.00020459	0.0143
% of Total General Revenue from Other Sources	-282.56574	37.5601	<.0001

Model 5: Dependent Variable=% of General Revenue from Property Tax (Pr>F =<.0001)

Independent Variable	Parameter Estimate	Standard Error	Pr > F
Intercept	0.18238	0.03693	<.0001
Total Population	4.50E-07	4.05E-07	0.1335
Median Age	0.00255	0.00081593	0.0010
Median Household Income	1.42E-07	1.87E-07	0.2242
% Urban Population	0.00248	0.00846	0.3847
Income Tax Rate	-0.03203	0.00835	0.0001
Total Value of Property	-1.24E-11	1.46E-11	0.1973
Total General Revenue	-9.51E-08	1.16E-07	0.2071
% of Total General Revenue from Other Sources	-0.24192	0.02135	<.0001

Model 6: Dependent Variable=% of Tax Revenue from Property Tax (Pr>F =<.0001)

Independent Variable	Parameter Estimate	Standard Error	Pr > F
Intercept	0.0984	0.07903	0.1069
Total Population	6.34E-07	8.66E-07	0.2324
Median Age	0.0064	0.00175	0.0002
Median Household Income	8.82E-08	4.00E-07	0.4127
% Urban Population	-0.01319	0.01809	0.2331
Income Tax Rate	-0.05992	0.01787	0.0005
Total Value of Property	-1.94E-11	3.12E-11	0.2673
Total General Revenue	-1.34E-07	2.49E-07	0.2957
% of Total General Revenue from Other Sources	-0.03885	0.04569	0.1978

APPENDIX B

Table Reference Guide

Column Label	Description	Tables Found In
General Revenue Total	*The total amount of general revenue by type of jurisdiction as defined by the United States Census Bureau*	II-A, II-B, II-C
Tax Revenue Total	*The total amount of tax revenue by type of jurisdiction as defined by the United States Census Bureau*	II-A, II-B, II-C
Income Tax Revenue Total	*The total amount of income tax revenue by type of jurisdiction as defined by the United States Census Bureau*	II-A, II-B, II-C
% of General Revenue	*The percentage of general revenue for all jurisdictions*	II-A, II-B
% of Tax Revenue	*The percentage of tax revenue for all jurisdictions*	II-A, II-B
% of Total Income Taxes	*The percentage of income tax revenue for all jurisdictions*	II-A, II-B
Property Tax Revenue Total	*The total amount of property tax revenue by type of jurisdiction as defined by the United States Census Bureau*	II-C
Tangible Tax Rate	*The tax rate in mills for the tangible property class as defined by the Ohio Department of Taxation*	IV-A through IV-O (except IV-H)
Residential/Agricultural Tax Rate	*The tax rate in mills for the residential/agricultural property class as defined by the Ohio Department of Taxation*	IV-A through IV-O (except IV-H)
Commercial/Industrial Tax Rate	*The tax rate in mills for the commercial/industrial property class as defined by the Ohio Department of Taxation*	IV-A through IV-O (except IV-H)
% of General Revenue from Property Tax	*The percentage of a municipality's general revenue that is generated by property tax revenues*	IV-A through IV-O (except IV-H)
% of Tax Revenue from Property Tax	*The percentage of a municipality's tax revenue that is generated by property tax revenues*	IV-A through IV-O (except IV-H)
Property Tax Levy Per Capita	*The total property tax levy for a municipality divided by the population of that municipality*	IV-A through IV-O (except IV-H)
Parameter Estimate of Income Tax Rate	*The value of the coefficient for income tax rate as an independent variable in the multiple regression model*	IV-H, IV-P
Pr > F for Income Tax Rate	*The p-value of income tax rate as an independent variable in the multiple regression model*	IV-H, IV-P

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