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The shifting of property taxes in Iowa

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THE SHIFTING OF PROPERTY TAXES IN IOWA

by

Charlotte Emma Ruebling

A Thesis Submitted to the
Graduate Faculty in Partial Fulfillment of
The Requirements for the Degree of
MASTER OF SCIENCE

Major Subject: Economics

Approved:

Signatures have been redacted for privacy

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INTRODUCTION

This thesis is an empirical study of economic adjustments to changes in property tax levels. These adjustments may take the form of tax capitalization, forward and backward shifting, tax transformation, or any combination of some or all of them in varying degrees. Ultimately, the interest is in measuring the adjustment to taxes and taking these into account in making tax policy to achieve economic policy goals. Adjustments to a tax determine the revenue collected and the extent to which economic policy goals will be affected. Understanding the adjustments permits more appropriate action to raise revenue and achieve economic policy goals.

Goals of Tax Policy

Revenue

A tax is obviously a source of public revenue to provide public services. Thus, revenue is the most fundamental goal of tax policy. Revenue will not be obtained from a property tax if taxpayers can avoid paying by evasion or can adjust their asset holdings so that property tax is not applicable. If property tax liability is dependent upon the condition of the improvements on the property, the owner can reduce his taxes by permitting the property to deteriorate. If the tax is lower under local resident ownership or non-profit ownership, the form of ownership can be adjusted.

Economic growth

When a political body imposes a tax, it hopes that by taxing and providing public services it will not adversely affect the total allocation of resources and cause a smaller or less useful bundle of goods and services

to be produced. It hopes to finance the public expenditure and reduce private production as little as possible. A tax policy seeks to enhance the value of total product and lay the groundwork for expansion of the productive capacity of the entire economy. If a tax causes sufficiently less private investment to be undertaken or causes enough private resources to be withdrawn from production, then it can adversely affect economic growth. If, on the other hand, tax collection could cause people to work harder, and produce more because of the tax, the economy would move closer to a point on its production possibility curve. Thus, the tax would surely encourage growth. Other things being equal, tax policy seeks the tax which encourages growth the most or at least hinders growth in the private sector the least.

Equity

Tax policy seeks to impose a tax consistent with the society's concept of social justice. Equity can be defined as the equal treatment of equals and the sufficiently unequal treatment of unequals. Of course, to be operational one must define equal and unequal and sufficiently. These are not mathematical definitions but very personal opinions. One must look at the characteristics in which people are equal and the characteristics in which they are not equal and decide which characteristics should dominate policy making.

We can illustrate the problem by comparing two examples in which the above definition of equity operates. Suppose that two families are equal in that the children of each need an education. Equal treatment of equals requires that both families receive an education. The same two families are also unequal with respect to income. One has an annual income of

\$15,000; the other has an income of \$3,000. Sufficiently unequal treatment of unequals requires that they be taxed differently. This example can be generalized into the principle of providing services publicly according to socially defined need and paying for the cost of them by the ability to pay.

Another definition of equity says each person who receives the same service should pay the same cost. This leads to the principle of association of benefits received with payment of taxes. Two families are unequal in that one uses the facilities at a public park extensively and the other uses them not at all. Equal treatment of equals might suggest that each hours use of the park should pay the same. Thus, the family using more of the public facility should be taxed more heavily for the park facility irrespective of income or ability to pay.

It is difficult to describe objective and precise standards of tax equity which will operate without ambiguity or the need for further interpretation. Our society seems to feel that both the ability to pay and the association of benefits received with payment are at different times appropriate criteria of tax equity. Since there is more than one criterion for equity and equity is only one goal of tax policy, it is often easier to decide which tax is best by voting. To vote wisely, however, it is necessary to know how alternatives affect different people and different goals. Given the information voters can weigh available options which affect their goals and choose the one with the most net benefits or least net costs.

In order for this process to operate, however, the community needs to know just what the burden of alternative taxes is and upon whom it falls. Because of price, wage, investment, and supply adjustments made in response to a tax, the actual burden of the tax does not necessarily fall on the

individual or firm who makes payment. His adjustments to the tax influence who will bear the ultimate burden of the tax and whether or not the goals of equity and economic growth will be fulfilled or repressed. It is not probable that a democratically determined tax policy will be optimal unless it is built with an understanding of the adjustments which determine the allocation of the ultimate burden, or incidence, of the tax.

The Influence of Adjustments on Tax Incidence

Tax capitalization

Tax capitalization is a change in the market value of a property caused by the imposition or elimination of a tax. If the imposition of a tax causes the market value of a property to fall, the owner will bear the current tax as well as all future taxes on the property even if the property is sold. The incidence of future taxes or lack thereof rests with the current owner if full tax capitalization occurs.

Forward shifting

Forward shifting involves a price increase which causes the tax to be borne by someone other than the person owning the tax base and making payment and incurring the initial impact of the tax.

Suppose a community wishes to tax its citizens according to their ability to pay. It imposes a progressive property tax taking a larger tax on large properties presumably belonging to high income rather than of low incomes. This pattern of impact will achieve the desired pattern to incidence only if the tax is not shifted. If the large property owners incurring the impact of the progressive tax own business property and are able to recover the amount of the tax by raising the prices of their goods or

services, the incidence of the tax will be shifted or passed on to the purchasers of goods and services. Purchasers are, of course, both low income and other high income people and, thus, whether or not this shifting by high income affects the final distribution of the total tax burden among income groups depends on the algebraic sum of the shifts on individuals and groups with different levels of income. If an individual high income person shifting the tax has enough parts of other people's tax shifted onto him, the pattern of the distribution of the tax may be the same before and after the shifting. If, and more likely, the shifters are net shifters, they shift a larger dollar amount of tax than is shifted onto them. If the higher income larger property owners shift some of their taxes to low income purchasers of goods, the pattern of incidence will differ from that of impact. A tax system designed on the presumption of incidence equal to impact will not achieve the equitable distribution sought.

If a tax is to associate payment with the benefits of the services provided with the revenues, then whether or not it is shifted also affects the achievement of the desired allocation of the burden. If, for example, new municipal parking facilities are financed by mercantile real property taxes which are shifted onto merchant renters, the costs and benefits may be associated. If the tax is not shifted, the costs and benefits may be dissociated. Some special property taxes or assessments produce the desired incidence pattern only if the tax is not shifted, others only if they are shifted.

It is also useful to know the incidence of taxes on rental property when choosing a source of revenue for the operation of schools and the city government. Only if taxes on apartments are shifted onto tenants will there

be a contribution by non-property owners to school costs via property taxes.

Backward shifting

If a taxpayer is able to recover his tax payment by reducing wages or avoiding a wage increase, he can shift the tax backward onto another resource owner. Labor bears the burden or incidence of the tax through a smaller return than it would otherwise receive. If a special charge for public sewage disposal permits a factory to avoid a needed wage increase for two or three years, the workers and the community may be paying several times more for the sewage plant than if they had financed it from general revenues. The community was, of course, seeking the association of costs and benefits through the special direct charge. However, the disruption in the expected wage trend which was caused by the tax created a backward shift of the burden and dissociated the costs of the sewer from benefits which accrued to the company and the community. Since the burden of the tax was shifted onto the workers not the company or the entire community, the costs and benefits are dissociated. Shifting can also contribute to the misallocation of resources toward investments and improvements in properties which are able to shift taxes. Misallocation of resources leads to hindrance or retardation of economic growth in the community.

Tax transformation

Tax transformation is a term used by E. R. A. Seligman (14, p. 6) to refer to an adjustment in the process of production. The adjustment makes possible the reduction of costs or an increase in the volume of production. The taxpayer recovers the tax by working harder or longer or by operating more efficiently rather than by shifting the tax onto someone else. Tax transformation not only does not shift the incidence of the tax, but it also

promotes economic growth. Most adjustments to taxes shift the incidence and reduce the efficiency of resource use. Tax transformation can be illustrated on a diagram of a product transformation curve (see Figure 1). The relationship between a merchant's output and costs is shown by point A prior to the tax increase. When faced with a tax increase he improves his position by reducing per unit costs. He may reduce costs while maintaining the same level of output and thus move toward point R on the transformation curve. Or he may increase the volume of business while holding his costs constant and move toward point P on the curve.

Shifting and Literature on Tax Incidence

Theoretical works on taxation emphasize the importance of ascertaining the incidence of a tax by determining possibilities of shifting and other adjustments to the tax. Consider the following statements from *Shifting and Incidence of Taxation* by Edwin R. A. Seligman:

The problem of the incidence of taxation is one of the most complicated, subjects in economic science. It has indeed been treated by many writers; but its discussion in scientific literature, as well as in everyday life, has frequently been marked by what Parieu calls the "simplicity of ignorance." Yet no topic in public finance is more important;...

...The incidence of the tax is, therefore, the result of the shifting, and the real economic problem lies in the nature of the shiftings. (14, p. 1)

Theories about tax shifting specify numerous requisites for tax shifting to take place and alternative circumstances under which it might occur. These circumstances include: (1) the nature of the tax--whether it is general or discriminatory, whether it is large or small in amount, how it is assessed and administered; (2) the competitive conditions in the relevant

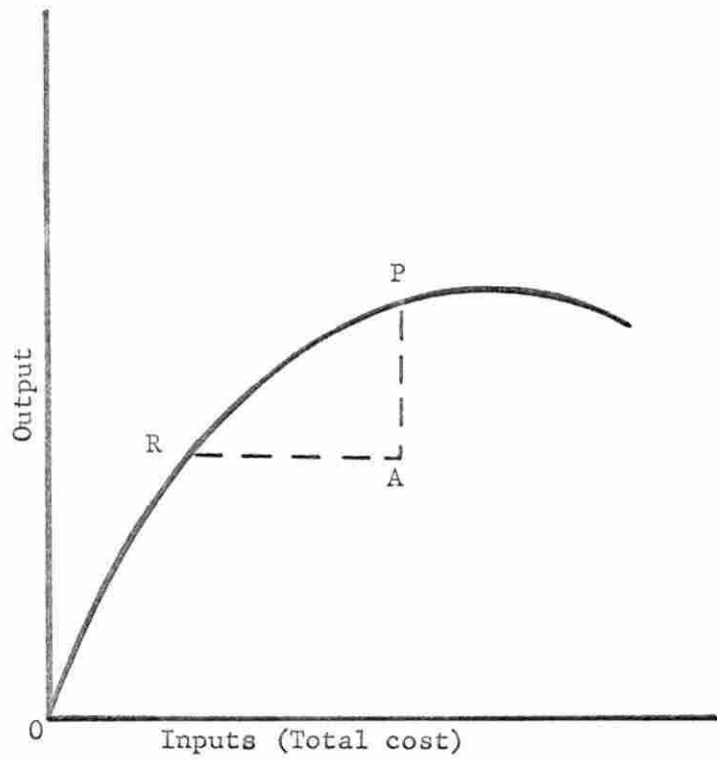


Figure 1. Product transformation curve

markets; (3) the cost conditions of production; and (4) the elasticity of demand. There is not complete agreement among tax theoreticians as to the relative importance of these circumstances to shifting ability as there is not agreement among economists in general as to the characteristics which determine the above circumstances. Presumably, if these circumstances could be empirically quantified, and if producers and consumers behaved as hypothesized, then the extent of shifting might be calculable by a formula. This is not currently possible. Problems exist in quantifying and isolating variables and estimating their affect on shifting. These difficulties have inhibited economists and while theoretical works on shifting abound, empirical studies are scarce.

Efforts to estimate tax burdens include only simplified assumptions on tax shifting because theory hypothesizes relationships too complex and abstract to determine empirically. A recent study compiled by the Tax Foundation makes the following statement:

The choice of assumptions on tax incidence is arbitrary, but also conventional...Sales taxes, exises and the numerous taxes on business costs (including the property tax levied on business property) are assumed to be shifted forward to the consumer. (18, p. 9)

John Adler in "The Fiscal System, the Distribution of Income and Public Welfare," estimates that two-thirds of property tax collections are from levies on personal property, owner occupied homes and farm land. Property taxes on these properties are assumed to be completely unshiftable. The remaining one-third of property tax collections falling on business property and farm improvements are assumed to be completely shifted forward (1, pp. 414-416). These are probably overly simple assumptions.

The assumption that taxes on business property are shifted forward

ignores theory's specifications with respect to elasticities and competitive conditions in particular markets. Assumptions that taxes on farm improvements are shifted forward are especially subject to error. An empirical estimate of tax incidence by Richard Musgrave and others assumes that to the extent farm real estate taxes are on income producing, as opposed to residential facilities, they can be treated as an excise entering into the general cost of doing business and are shifted forward (11, p. 23). Rufus Tucker in a subsequent article on the distribution of tax burdens takes exception to the assumption used in the Musgrave article and to the results of their study:

It is an axiom of tax-shifting theory that the only way a person on whom a tax is imposed can pass it on is by limiting the supply of the taxed article (or, in the case of backward shifting, limiting his demand for some other person's product). It is unusual and usually uneconomic for a farmer to limit his crops because of taxes; on the contrary he might attempt to increase his crops in order to be able to pay the taxes...For this reason a very small part of the tax on farms might be shifted to consumers. (19, p. 279)

Erroneous assumptions on tax shifting in studies of how the tax burden is distributed among income groups are acceptable if shifting does not appreciably affect the way the tax burden is distributed among income groups. But if tax incidence is significantly affected by alternative "guesses" of tax shifting, a strong effort is needed to improve estimates and, hence, decisions in specific tax policy decisions.

Among exceptions to the paucity of empirical works on shifting are The Shifting of the Corporation Income Tax by Marian Kryzaniak and Richard Musgrave (8), and The Sales Tax in the American States by Robert Murray Haig and Carl Shoup (5). Haig and Shoup dealt with the shifting of sales taxes in a manner similar to the way in which we shall examine property tax shift-

ing. They conducted interviews with businessmen to determine the extent to which shifting of sales taxes was a business practice in different areas and for different types of business. The Iowa Tax Study (ITS) conducted by Iowa State University in 1965 took a similar approach to property tax shifting. One section of the questionnaire, shown in Appendix A, asked property owners questions relevant to action on several possible adjustments affecting incidence. These adjustments include forward and backward shifting, tax capitalization, and tax transformation, and evasion through allowing property to deteriorate.

This thesis will use data obtained in the ITS to discern the extent to which Iowa property owners recognize and consciously engage in the above adjustments. The analysis will include comparisons of reactions among owners of different properties and an attempt to explain the differences which arise due to variation in the type of property owned and other economic characteristics.

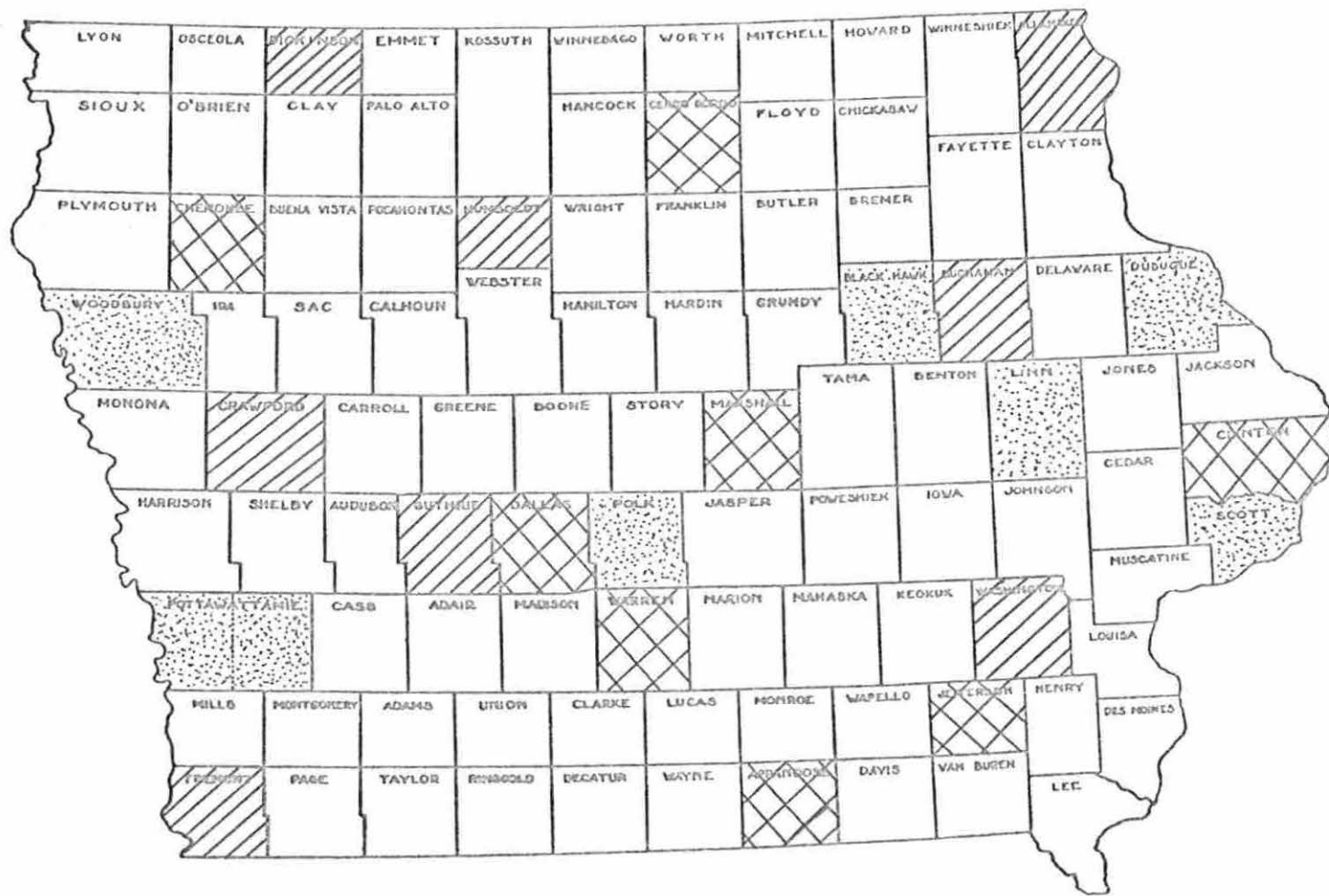
THE IOWA TAX STUDY

Description of the Sample

In 1965 Iowa State University conducted a study concerning property taxation in Iowa. About 900 Iowa property owners were visited and interviewed to obtain information on property tax assessments and payments, possible shifting of property taxes, personal opinions with respect to taxes and local government, and other socio-economic characteristics such as income, assets, employment, education and household composition. The 900 were chosen systematically so that they would adequately represent non-corporate Iowa residents who were owners of mercantile, residential and agricultural property in various geographical locations in Iowa.

The sample of Iowa property owners who were interviewed was drawn from county courthouse tax files. The sample was stratified by dividing Iowa's 99 counties into three groups. Group 1 counties were those whose largest city had a population of 50,000 or more; there were seven counties in this group. Group 2 counties were those whose largest city had a population between 5,000 and 49,999; 32 counties were in this group. Group 3 counties were those whose largest city had a population less than 5,000; there were 60 counties in this group. All seven of the Group 1 counties were used in the survey. Eight counties were chosen systematically from each of the other two groups. A serpentine format was used in selecting these counties so that varied geographic areas would be represented in the sample (see Figure 2).

The county tax bill files of the 23 counties included in the study were then sampled to determine the property owners who would be interviewed.



Group 1



Group 2



Group 3

Figure 2. Location of counties in ITS sample, by size group

Since the study was interested in the relationship of non-corporate Iowa resident property owners to the property tax, the sampling procedure sought to give these households one and only one opportunity to enter the sample and to exclude property owned by corporations and non-Iowans. There were several difficulties to achieving this goal. Industrial properties were excluded because they are generally owned by corporations. Corporations which owned other types of property did have the possibility of entering the sample, but these properties were analyzed separately. Out-of-state resident property owners theoretically should have been included, but were also excluded because of the difficulty of conducting an interview with them. Other non-corporate resident property owners did not have an opportunity to enter the sample if their credits and/or exemptions nullified their tax. Their names were not listed in the tax bill files and hence they could not be in the sample.

Residents who owned more than one property were given but one chance to be a part of the sample. Mercantile, agricultural and residential properties were sampled at different rates, $1/266$, $1/1600$, and $1/1600$ respectively. If a person owned mercantile property he entered the sample at the rate of $1/266$ and all other properties owned by the household entered coincidentally. If he owned agricultural property, and no mercantile, he entered the sample at the rate for agricultural properties; all other agricultural and residential properties owned by the household also became a part of the sample. If he owned residential property only, he entered the sample at the rate for residential property. If an individual or household owned property in more than one county, he was allowed to enter the sample only in the county in which he owned residential personal property.

Though numerous difficulties were encountered due to lack of standard methods of filing the tax bills in different counties, those who worked to design the study and to draw the sample were successful in obtaining a sample with the desired characteristics. The final sample of 926 property owners included 829 non-corporate Iowa residents, information from and about which will be used in this report on tax shifting.

Limitations and Advantages of the Data

Two populations

The members of the sample were visited and interviewed during the summer of 1965 to verify information on taxes, assessments, property ownership, and location gleaned from tax records and to obtain new information. Because of the different sampling rates and the stratification of the sample, the schedules had to be given different weights before the information could be tabulated and analyzed.

Since the property tax is levied on properties, but is paid by individuals, firms, or households, a study of property tax shifting is actually working with two populations--properties and property owners. The number of properties in the sample was determined by the owners. Each property which the owner considered to be a separate economic entity was given an economic unit number and is considered a property. Since an individual or household can own several properties, the sample and population of properties is considerably larger than those of property owners. The sample of properties included 131 mercantile real properties. Approximately one-third of these were completely or partly rented out; the remaining two-thirds were used in the owner's business. The sample included 326 agricultural real properties;

151, or almost one-half of which are rented out. Of the 621 residential real properties in the sample, we are mainly interested in the 85 which were all or partly rented out since there is almost no opportunity for shifting the taxes on owner occupied dwellings. A few, 21 to be exact, residential real properties were used in relation to an income producing activity. They were classified as residential because the business function of the property was quite secondary to the housing function.

In this study of tax shifting the population of properties is as relevant or more relevant than the population of property owners since the owner responds to a tax on each property. It is with regard to this matter that we meet a serious deficiency in the data. The information obtained is in reference to only one economic unit of each kind--mercantile, agricultural, or residential--of property owned. On the first page of Section IV of the questionnaire,¹ the owner was asked to supply information on the value and use of each economic unit he owned. However, on the following page which begins to deal directly with shifting and other adjustments to a 20 per cent tax increase, he is asked to respond with reference to only one economic unit of each kind. Since the questionnaire was quite long, this was done to conserve time. The interviewer determined which unit of each kind to use by referring to a random numbers table.

A hypothetical example will suggest the difficulty which arises. Suppose a household owned one mercantile and two residential properties, one of which was occupied by the family, the other being rented out. The owner would give answers representing his reaction to a tax increase on the mer-

¹See Appendix A.

mercantile property and on one of the residential properties. If the owner's home was selected using the random numbers procedure, then all answers, including the value and the amount of the tax, which refer to the residential real property of that schedule refer to the owner occupied residence. No answers would have been given where rental property is considered. In fact there would be no trace of this rental property in this study. Instead, the answers given in response to the owners occupied residence would be weighted by two to represent the two residential real properties owned by the respondent. Throughout the schedule the answers are given weights on the basis of the county from which the property was sampled and the kind of property. The weights give the sample a proper relationship with the population of property owners in Iowa. In order to move to the population of real properties in Section IV, the answers in this section are given an additional weight which is the number of properties of a particular kind owned by the sampled household. All tabulations of answers and information in this study are in terms of properties rather than households.

The fact that answers are limited to only one unit of each kind of property hinders the ability of this study to evaluate relationships among variables about which the survey obtained information. We might wish to consider a relationship between shifting ability and sales. Often, however, a property for which the owner refused to or could not supply this information was selected while a property for which value and sales information was complete was passed over.

In the portions of the questionnaire and analysis which deal with agricultural and mercantile personal property, the populations of properties and property owners are the same. All mercantile personal property

owned by one household is aggregated. Agricultural personal property is handled similarly. No weights additional to those used throughout the schedule are necessary.

Incomplete schedules

The data also suffers from the failure of sample members to supply the requested information. Some of the questions were applicable only to owners of a certain type of property, but many property owners failed to answer questions which were applicable to them either because they did not know the answer or did not wish to make it known. This again restricts the identification of relationships by limiting the sample size for which values of all variables are known.

Opinions as data

An important characteristic of the data is that they represent opinions. There are a number of drawbacks to relying on opinions in analysis of tax shifting. There is absolutely no guarantee that the taxpayer could actually do what he thinks he could do. Upon consideration of the theory of shifting, it seems as though it would be accidental if what a respondent replied that he thought he could recover is in fact what he could recover. A respondent's ability to evaluate his shifting ability decreases when there are a fairly large number of suppliers and his opportunity for shifting the tax depends on others' actions as well as his own. Since most businessmen have experienced tax increases before and are probably familiar with the responses within their market, their opinion is something of an approximation to shifting ability.

A second problem in dealing with opinions is that we cannot be certain that the respondent is not intentionally giving misleading answers in the

hope of affecting policy in the desired direction--avoiding a tax increase. A taxpayer (who cannot shift the tax) might say that he could recover a tax increase by raising prices, thinking that policy makers would find price increases undesirable and, therefore, refrain from increasing the tax. On the other hand, a taxpayer may seek to arouse sympathy by emphasizing the burden that the tax will place on his own business when in fact he can shift part or all of the tax forward.¹ Since deliberate falsification can affect answers in either direction, it would probably not severely bias the data. More importantly, since Iowa State University is not in a policy making position, it is not unreasonable to assume that respondents did not seek to bias the results and answered to the best of their ability.

Working with opinions has one particular advantage for analyzing tax shifting. It allows us to focus on the tax as the cause of a change in behavior. Analysis of shifting through observing prices before and after a tax increase does not permit this to as great an extent. With such after the fact analysis, we could not be sure whether a tax increase prompted a change in price or whether the same forces effecting the tax increase also caused the price change. Moreover, there would be no information on the mechanism through which the shifting took place. Results would tend to reflect price changes which took place shortly after the tax increase, ignor-

¹A business can shift the entire tax forward and yet incur a decline in profits. Seligman describes this phenomenon as the "pressure of taxation" (14, p. 11). The businessman raises prices enough to shift a unit tax forward, but experiences a decline in net revenue due to a decrease in sales. The property tax is a bit different since the unit of taxation is not associated with a unit of sales. Full forward shifting of the tax can be said to occur only if the property owner increases his total net revenue by an amount equal to the tax payment.

ing subsequent shifting which comes about through a decline in investment.

Long run and short run

Our analysis encounters a similar problem since the time horizon of the answering property owner is probably quite short. We would expect that a property owner is considering a time period of not more than three years when he answers that he can or cannot recover a tax increase by raising prices or rent. If he cannot raise prices within this period, as far as he is concerned, he simply cannot shift the tax. Actual shifting, however, may require a period of time longer than three years to work itself out and might not, therefore, be perceived by the shifter. The increased fixed costs of larger property taxes might eventually squeeze marginal producers out of business; supply would then be reduced and the remaining sellers will be able to raise their prices. Or the increase in property taxes might prevent new suppliers from entering the market. An increase in demand, with supply remaining the same, would permit suppliers to raise prices to recover the tax.

Because property owners tend to look at shifting as something to be done within a short period of time following a tax increase, we can expect property owners to underestimate their actual shifting ability. Investment responses to a tax increase indicate long-run adjustments to the tax and the extent to which shifting which is not perceived by the shifter occurs. If a tax increase discourages investment, then the supply will eventually be reduced or will grow less rapidly than in the absence of the tax. This may lead to some forward shifting of the tax.

The marginal nature of the data

The questions posed by the ITS to ascertain property owners' reactions

to and ability to shift property taxes were to be answered with reference to a 20 per cent increase in property tax payments. Since answers refer to a tax increase, they reflect marginal behavior. We cannot use the information to estimate total shifting, but we can evaluate tax changes with respect to shifting. Since property taxes have been increasing steadily, questions concerning responses to a tax increase allowed respondents to use a frame of reference that was familiar. Thus they probably gave rather reliable answers. More abstract questions such as, "Do you currently shift property taxes?" would probably have produced less reliable answers.

In this study we use property owners' answers to questions concerning reactions to a 20 per cent tax increase. Questions asked about the effects of a property tax increase on investment and how much of the tax could be recovered by increasing prices or sales, or by reducing costs. Full recognition should be given to the uncertainty of property owners' knowledge of actual shifting ability. The answers give an indication of property owners' opinions on what they could do to shift a tax increase.

FINDINGS

This chapter reports the answers to the questions which the ITS posed to property owners about tax shifting and capitalization. Classification of properties and respondents plus economic theory and speculation are used to interpret the respondents' answers and to gain understanding of the adjustments to property tax increases in Iowa. Charts and tables are used to report visually and quantitatively how Iowa property owners responded.

Tax Capitalization

The survey asked each property owner the following question about each of his properties.

What do you feel would happen to the market value of this property as a result of a 20 per cent increase in property taxes?

Possible answers were: Increase; Decrease; Remain unchanged.

If the property owner says that an increase in his property tax will decrease the market value of his property, he is indicating a belief that all or part of the tax will be capitalized. That is, he expects that the tax cannot be completely shifted, but part of it will reduce his net income. For income producing land or property, the market value is related to the size of the expected future stream of income produced. If the net return from a piece of land is \$2000 and the capitalization rate for this type of investment is 4 per cent, then, according to the capitalization method of determining market value, the selling price would be $\$2000/.04$ or \$50,000. Let us suppose that there had been a \$250 tax on this land so the before tax annual net income would have been \$2250. A 20 per cent increase in this

tax would reduce annual net income by \$50 to \$1950. Assuming that there was no change in the capitalization rate, the market value of the property would have fallen to $\$1950/.04$ or \$48,750. The market value of the property was \$1250 less because of a \$50 change in the tax.

Economic theory sets a number of requisites for capitalization to occur. (1) The tax cannot be shifted.¹ If the tax can be shifted, then it will not reduce net income and therefore will not be capitalized into a reduced selling price. (2) The rate of return of all capital is not affected by the tax increase (4, p. 366). If a property tax increase were complete in its coverage of all forms of assets, the rate of return on all capital might be reduced by the tax increase. The capitalization rate would then be lower and the market value of individual properties might not suffer as a result of the tax. The property tax is far from being a uniform tax on all capital. Some capital assets are not subject to property taxation; millage levies differ from district to district; and sales value to assessment value ratios vary from property to property. Therefore, to the extent the property tax is not shifted, it is likely to be capitalized.

Increased property taxes also lead to declines in the values of owner occupied homes. Even though there is no money income produced by an owner occupied house, the cost of the housing service provided is increased. As the price increases, the quantity demanded in the city or area of the property tax increase is diminished. This can be illustrated by an example. If two homes are comparable in every respect except taxes, the one with

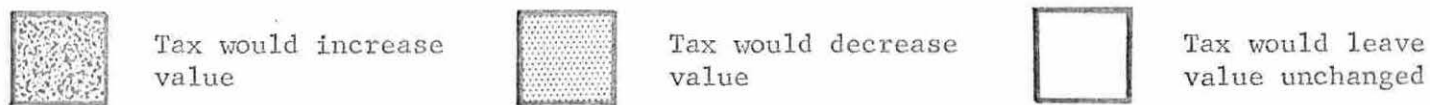
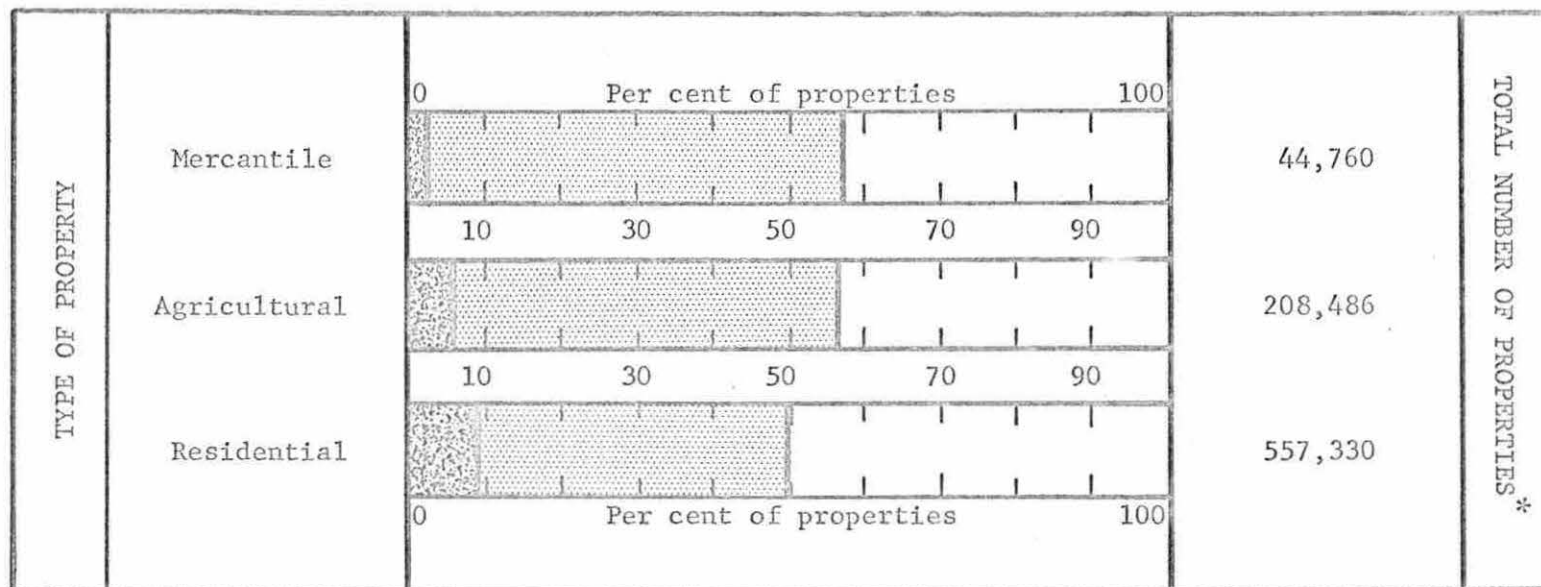
¹See Appendix B for a consistency check of answers given by property owners.

higher property taxes would be expected to have a lower selling price. The reason is that buyers substitute the lower taxed houses for the higher taxed ones until the prices adjust to the equilibrium differential. Even if the taxes on all houses are increased, prices of houses can decrease as a result of substitution. There will be some substitution of non-housing for housing purchases because of the higher housing tax and cost.

Respondents to the ITS generally felt a tax increase would decrease the value of their property (see Figure 3). Some properties (2-10 per cent) are owned by persons who believed that an increase in property taxes would increase the value of their property. This response is surprising and probably indicates the respondent did not understand property tax capitalization. However, respondents might also have thought that public services would be better as a result of tax increases and these public services would increase property values. Some may have experienced past property value increases regularly and felt that strong forces increasing property values would persist and increase property values even with a tax increase. The respondents were asked to assume that "all conditions except taxes remained unchanged." This condition may have been misunderstood by a few or they failed to follow the thinking process which the question sought to invoke.

A tax increase would not affect the market value of 40-50 per cent of properties. Several situations could have led property owners to answer that a property tax increase would leave the property value unchanged.

- (1) The dollar amount of the tax increase is so small that it would not influence prospective buyers.
- (2) The property tax could be shifted.
- (3) The property owner felt that the tax would simply offset strong forces which would otherwise have increased the property's value.
- (4) The property owner



* Totals do not include properties whose owners failed to answer.

Figure 3. Effect of a tax increase on the value of property

Table 1. Effect of a property tax increase on the market value of rental and non-rental residential property

Market value effect	Use of property		
	Rented out	Partly rented out	Not rented out
Increase	1.6 %	3.5 %	10.1 %
Decrease	62.2	52.8	40.1
No effect	36.2	49.9	43.7
Total	100.0	100.0	100.0

felt that all properties in the area would be affected similarly by a tax increase and thus other purchases would decrease but quantity demanded and prices of real estate would remain constant.

The proportion of residential property owned by respondents who expect a decline in market value is 50 per cent and smaller than the proportion (51 to 55 per cent) of mercantile or of agricultural properties who expect a property value decline in response to tax increases (see Figure 3). This is not expected from shifting theory. There is a stronger probability of shifting and thus less expectation of tax capitalization on income producing properties. All agricultural and mercantile property is income producing while only 17 per cent of residential is. We would, for the same reason expect that a smaller proportion of residential rental properties than owner occupied residences would experience a decline in value as the result of a tax increase. In fact, the opposite is the case (see Table 1). Owners of 62.2 per cent of properties which are rented out, compared to 40.1 per cent of properties which are not rented out, felt a tax increase would cause a

decrease in the market value of their properties.

The unexpected pattern of answers on tax capitalization occurs because owners of income producing properties are more aware of the tax capitalization process and recognize more fully its influence on the market value of their property than do home owners. Even if a portion of the tax can be shifted, the typical businessman or landlord realized that it could not all be shifted and that, on a rental or business property, the remainder of the tax would be capitalized into a reduced selling price. Owners of their own single family residences, on the other hand, probably had less understanding of tax capitalization and, therefore, less often recognized the effect of taxes on the value of their property. Responses to this question are probably honest, but the degree of tax capitalization is probably underestimated both absolutely and relatively among home owners.

A property tax increase would decrease the value to some extent of at least 50 per cent of real properties in Iowa. Such tax capitalization also indicates that current owners are benefited relative to future owners by property tax cuts.

Investment

Property owners were asked how a 20 per cent tax increase would affect their investment in property subject to the tax. Owners of over 60 per cent of real properties said a tax increase would discourage their investment. In contrast over 60 per cent of personal property owners indicated they would not alter their investments in equipment, inventory or livestock. Thus property tax increases seem likely to be more discouraging for real estate improvements than store inventories and other working capital like

beef cows.

Investment decisions are long run decisions and are in principle influenced by the costs and returns expected on the investment in the future. Thus a tax increase could logically discourage investment and thus decrease product supply, increase product price, and thus shift the tax and change the incidence. Thus consumers would soon suffer with less goods and higher prices as a result of property tax increases. Professor Vickrey, an economist, also has suggested that any disincentive effect on investment by property taxes causes a burden also to be shifted onto future generations in the form of a smaller stock of capital (9, p. 286).

Another effect of curtailed investment resulting from property tax increases might be to capital and hence for labor used by the construction industry. If the housing industry makes fewer improvements, the demand for painters and the services of small contractors will decline. To the extent that this fall in demand forces reduction in the quantity utilized and the prices paid for these services, the adjustment to the property tax can be shifted backward to the construction industry. The amount of effect on the construction can be larger or smaller than the tax obtained; because tax on an apartment house is increased \$1000, the owner may delay repainting for a year or so and thus deny income to painters of well over \$1000.

If investment is discouraged, after a time savers will also feel the effects of the tax (12, p. 36). The demand for loanable funds could decrease enough to cause interest rates to fall. A tax increase may make home owners less willing to incur a mortgage in order to make improvements; others may become less inclined to buy a home. If the supply of savings remains unchanged and demand for loanable funds for non real estate or non local

uses does not rise, savers may be adversely affected through a lower return. The size of the effect on savers cannot be determined as any definite proportion or multiple of the tax increase.

Of course if a tax on rental housing discourages investment, deterioration in the quality of housing will result. If this deterioration in quality is not accompanied by a corresponding decline in rent, which it could not be if shifting were to take place, a burden resulting from adjustment to the tax is placed on the tenant even though the rent is not raised.

James Heilbrun (6) traces the investment effects of a property tax increase on the rental housing industry. He considers a tax on the combined value of the site and improvement. This is typical of local property taxes in the United States. The tax, he says, would not affect the operating outlays or short-run expenditures of the landlord so the condition of the structures would remain unchanged in the short-run. The tax would, however, restrain construction of new housing. Thus the supply would grow less fast than demand and rents would rise, thus making it possible, Heilbrun says, for the portion of the tax falling on the building to be shifted.

If, as in the ITS results, investment is discouraged, old housing involving the greatest degree of dilapidation and design obsolescence would be most effected. Thus these old low rent houses may be first to be eliminated from the supply allowing taxes to be most easily shifted to tenants of this type of housing (see Table 2) (7, pp. 91-92). The ITS says investment would be inhibited most in those rental properties which had experienced a decline in value over the five years preceding the survey. Depreciation and the removal of improvements were the main reasons for declining value of property. Since older buildings are probably occupied by families of

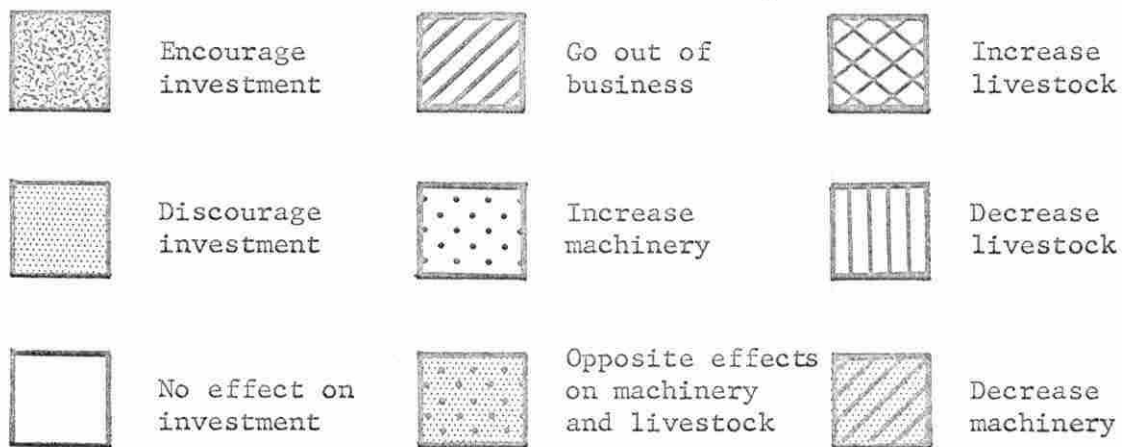
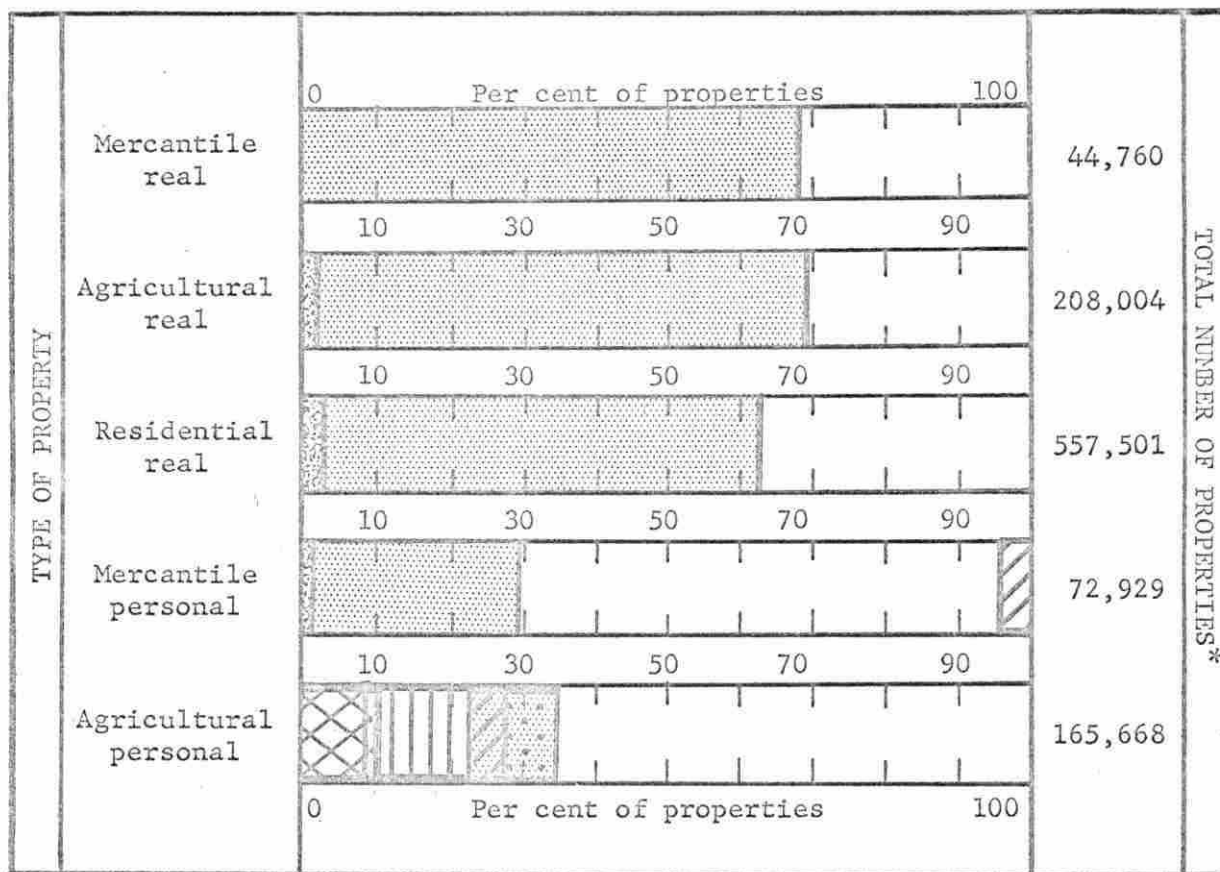
Table 2. The effect of a property tax increase on landlords' investment by the change in the value of the property which had occurred in the five years preceding the survey

Investment effect	Past change in value		
	Increase	No change	Decrease
Discourage	66.9%	76.1%	100.0%
No effect	33.1	23.9	0.0
Total	100.0	100.0	100.0

lower income, the result is that low income families would first bear a burden from investment discouraged by property tax increase. A large portion of a property tax increase is probably shifted forward on old, poor quality rental housing.

The decline in investment reported by all types of property owners due to a tax increase would fall partly on suppliers of capital, partly on the labor used in producing it and partly on consumers. The total effect may be larger or smaller in value than the tax increase.

A tax increase is expected by the respondents to have a much larger negative effect on investment by real property owners than by owners of agricultural and mercantile personal property (see Figure 4). Owners of a few pieces of mercantile personal property said the tax increase would cause them to go out of business. The business would have to be very marginal for a tax increase of 20 per cent to be large enough relative to total costs and total sales to logically explain "going out of business." On the average a businessman's tax on real property will be greater relative to the gross return on the property than his tax on personal property. On mercan-



* Total does not include properties whose owners failed to answer.

Figure 4. Effect of a tax increase on investment

Table 3. Per cent of properties within a tax increase group which would incur a decline in investment by type of property

Type of property	Amount of tax increase				
	\$0-\$24	\$25-\$49	\$50-\$99	\$100-\$199	Over \$200
Mercantile real	55.5%	64.6%	79.8%	70.5%	62.4%
Agricultural real	40.6	43.4	45.9	60.6	59.9
Residential real	47.1	62.6	75.1	66.5	100.0
Mercantile personal	25.0	27.7	36.2	24.6	56.9

tile personal property the tax is very small relative to total sales and total costs. The amount of the tax, however, does not explain the larger investment response on real than on personal property. For every tax increase of a certain size a large proportion of real than personal properties would decrease investment (see Table 3). This might not be expected since it is easier to disinvest in inventory and facilities less durable than a structure. On the other hand, a business depends more on its inventory and equipment than on the physical condition of its plant.

The answers given by owners of agricultural personal property (see Figure 4) offer an opportunity for speculation into their reasons for giving such answers. Although most responded that the tax increase would not influence their investment decisions, note that 8.7 per cent said that the tax increase would cause them to increase their investment in livestock. This might be because certain animals are not taxed. Another possible explanation for this answer has been suggested to me. Work with livestock is

a rather unremunerative activity in terms of income per hour of work. But much of the work is done at times which might otherwise be leisure time--early mornings, evenings and winters. It is possible that farmers who would increase their livestock investment would be substituting labor for leisure in an effort to maintain the income level they had before the tax increase. The 11.9 per cent who would decrease investment in livestock realized that, after a tax increase, they would be earning even less in their marginal hours of work and concluded that it would no longer be worthwhile. Those who would increase livestock have a greater marginal preference for income than for leisure, and those who would decrease livestock have a greater marginal preference for leisure.

The opinions expressed by Iowa property owners in response to the ITS support the hypothesis that property taxes discourage investment. Nearly 70 per cent of mercantile and agricultural properties and 60 per cent of residential properties would suffer a decrease in investment if property taxes were increased. Owners were in effect saying that they would be unwilling or unable to accept a lower return on new investment while at the same time bearing larger fixed costs on their current stock of property.

The widespread reported discouragement of investment which Iowa property owners would feel if their property taxes increased by 20 per cent suggests that the costs of having these funds removed from the private sector through property taxation might exceed the benefits of having the funds channeled through the public sector. The amount of investment discouraged by the tax in one year may cause a burden on labor, savers, renters, property owners and society in general which exceeds the amount of the tax. After a period of time a property owner may realize that he can raise

prices, shifting the tax, and resume or expand his pattern of investment.

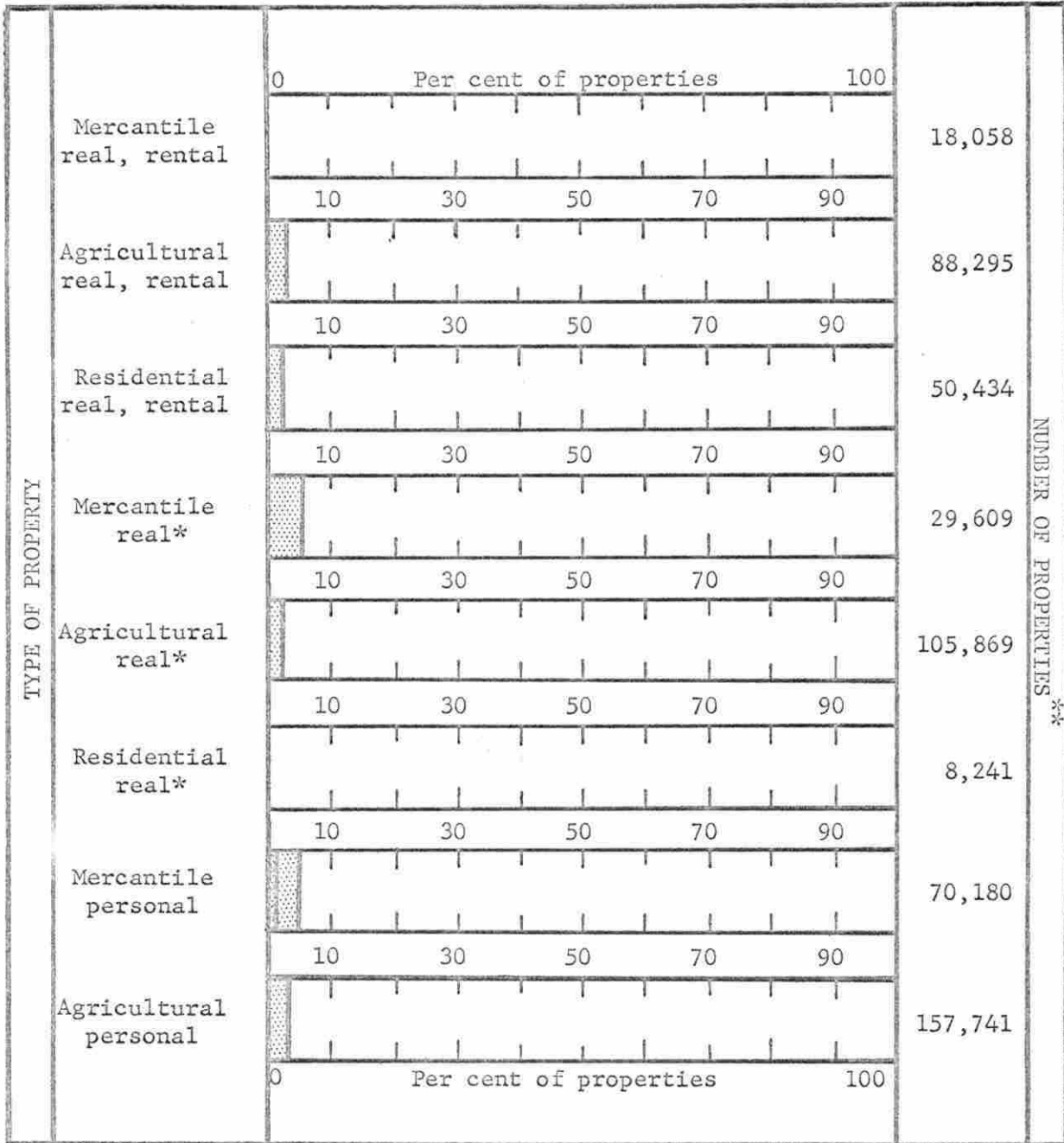
Ability to Recover the Tax by Reducing Costs

The ITS asked how much of a 20 per cent tax increase could be recovered by reducing costs. An answer that all or part of the tax could be recovered by cutting expenses suggests that part of the tax may be shifted back to the suppliers of the items whose demand was decreased by efforts to economize. A positive answer to the question also means that the property owner was not in a profit maximizing position before the tax increase.

Only an insignificant number of property owners, less than 5 per cent, felt they could recover any of a tax increase by reducing costs (see Figure 5). From this we can conclude that most property owners felt that they were approximating a profit maximizing position or one which their preferences would not allow to be changed by the tax increase. Answers also suggest that there would be very little backward shifting as the result of short-run decisions to reduce expenses. In general a property tax increase would affect other costs so slightly that this adjustment can be ignored in estimating the incidence of the tax.

Ability to Recover the Tax by Increasing the Volume of Business

Property owners who used their property in their own businesses were asked if they could recover any of a property tax increase by increasing their volume of business without increasing prices or costs. The question is similar to the previous one in that it concerns tax transformation; however, the responses were quite different. While less than 5 per cent would reduce costs, between 10 and 25 per cent of properties had owners who felt



Could recover all of tax increase

 Could recover part of tax increase

 Could recover none of tax increase

* Real properties used in the owner's business.

** Numbers do not include properties of owners who failed to answer.

Figure 5. Ability to recover a tax increase by reducing costs

they could recover all or part of the tax by increasing the volume of business (see Figure 6).

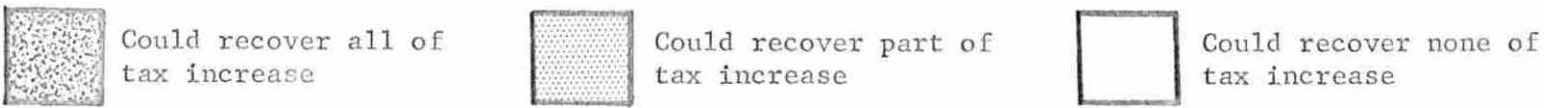
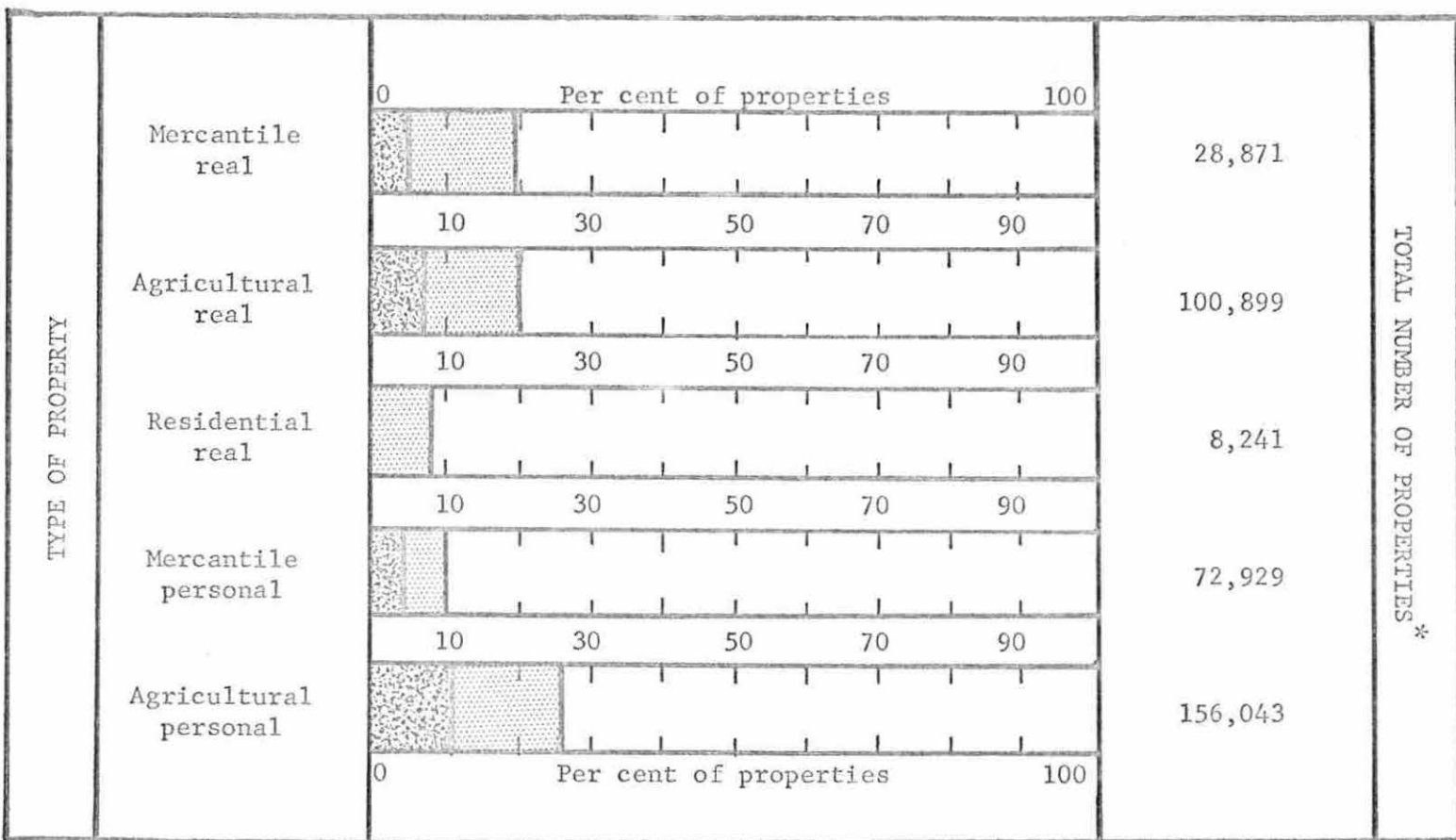
A greater proportion of agricultural, than mercantile or residential property owners would try to recover the tax increase by increasing their volume of business. This is probably because farmers have less opportunity to shift their taxes than do owners of other types of property. Also the farmers' working time can be varied more easily than that of other businessmen. When a property owner answers that he can recover the tax by increasing his volume of business without raising costs, he is indicating a willingness to work harder. The leisure of the property owner rather than his net income or the consumer's real income bears the tax.

To the extent that a property tax increase causes property owners to increase their volume of business, the tax encouraged growth. The tax increase will bring in the revenue it was designed to produce and the pattern of incidence will be unaffected.

Ability to Recover the Tax by Raising Rent

One question asked: "How much, if any, of this tax increase could you recover by increasing rent?" This question approaches shifting directly through the relationship between the tax and the owner's pricing decision rather than indirectly through the consequences of his and others' investment decisions.

The ability to shift the property tax forward in the relatively short run depends on market demand and the competitive position of the supplier. Forward shifting may be possible if the demand is inelastic. If, for example, there is always someone waiting to rent a certain property should



* Totals do not include properties whose owners failed to answer.

Figure 6. Ability to recover a tax increase by increasing volume of business

it become vacant, the property owner could probably increase rents and still keep his property fully rented. This ability to keep a property fully rented while increasing rents implies that the property owner commanded excess market power before the tax increase, or that there was an excess demand which the pricing mechanism had not eliminated. A landlord would have refrained from raising rents in the absence of a tax increase if he felt that raising rents would encourage an increase in the supply of rental housing. If the general level of rents increased, other property owners might find it worthwhile to rent out rooms in their homes, or contractors and real estate dealers might find it profitable to construct new rental housing units. The resulting increase in supply would infringe upon the individual landlord's market position. After a tax increase, however, new construction would be inhibited as we noted above,¹ preventing the increase in supply. Competition could still come from owner occupied residences who hoped to recover a part of their own tax increases by renting out a portion of their homes. If the tax increase led all landlords to attempt to shift the tax forward, they would probably meet with success.

In the case of agricultural land, the ability to shift the tax onto tenants in the short run also depends on the demand for rental land by tenants or potential tenants. A person who owns agricultural property and has rented it out has three alternatives when faced with a tax increase. (1) He can increase the rent he is charging tenants shifting part or all of the burden onto them. (2) He can continue operating as before and bear the tax himself. (3) He can sell the land and bear the future taxes capitalized

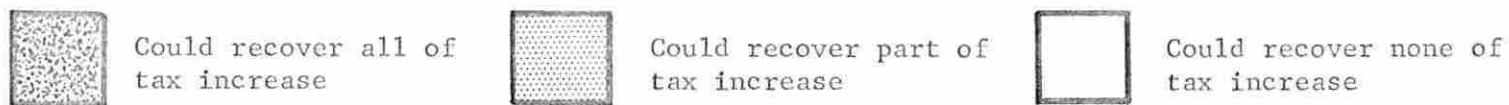
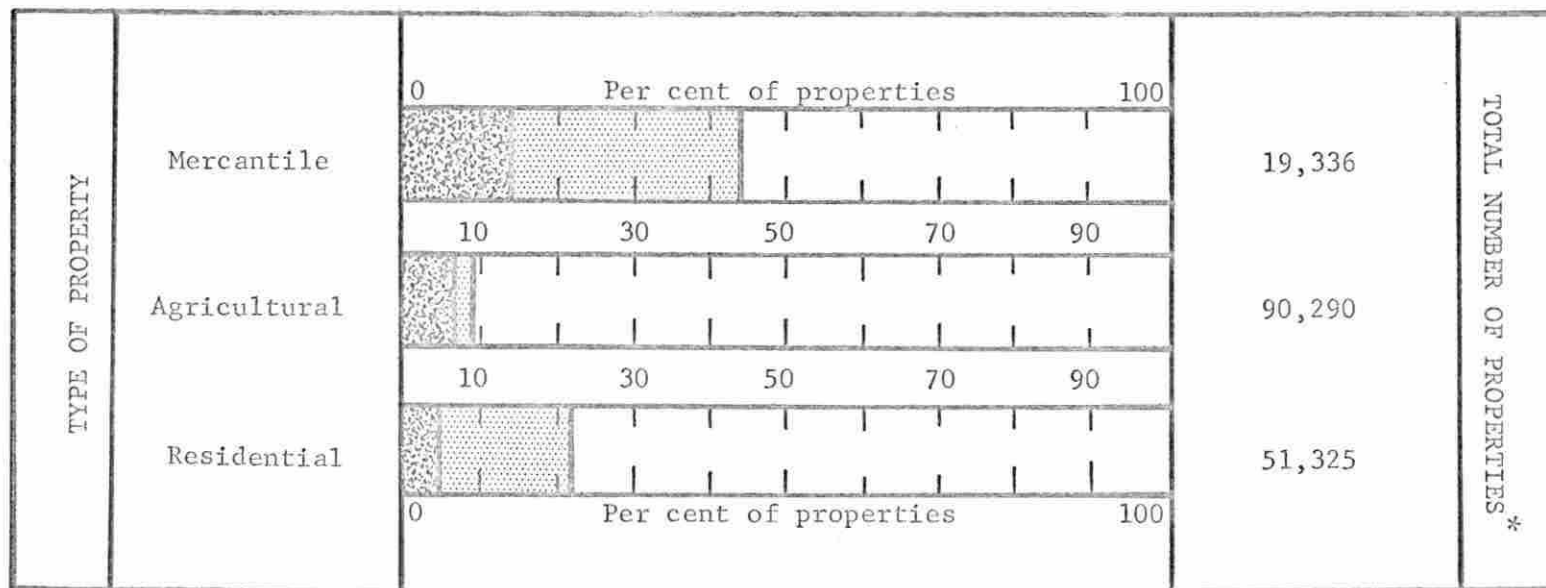
¹See p. 28.

into a decline in the property's market value. The first action is preferable to the landlord. However, it will successfully relieve him of the tax burden only if he can continue to rent out the property at a higher rent. Since the profit margin of the tenant may be quite low, an increased rental charge could cause the tenant to move elsewhere or to leave farming altogether.

The shifting of mercantile property taxes onto tenants works similarly. If the tenant is doing well enough that he can and will bear a portion of the owner's tax to remain in his present location, the tax can be shifted.

Most owners of rental property do not feel that they could directly shift a tax increase onto tenants (see Figure 7). There is considerable variation in presumed shifting ability among different kinds of property. Mercantile property owners indicate a much greater ability to recover the tax increase by increasing rent. Over 54 per cent of mercantile properties compared to 9.6 per cent for agricultural and 22.8 per cent for residential could shift the tax onto tenants. An explanation for the variation in answers among property types is related to the elasticity of demand for tenancy in the properties.

We would expect a fairly high elasticity of demand for tenancy on a specific agricultural property. Most agricultural property owners felt that their tenants would find another parcel of land to farm rather than pay a higher rent. This implies that the demand for rental agricultural land in general is elastic. Let us assume that prior to the tax increase the market had reached an equilibrium in which all properties are rented



*Totals do not include properties whose owners failed to answer.

Figure 7. Direct forward shifting of a tax increase to renter, by property type

out, and that the supply of rental land is inelastic.¹ If the landlord attempts to raise the rent, the tenant has the alternatives of leaving farming, buying a farm, or bearing the tax in the form of higher rent. Most agricultural property owners felt that their tenants would take one of the former actions rather than pay a higher rent.

In the case of residential real property the elasticity of demand for a specific room or structure may also be quite high. Whether or not a landlord will attempt to raise the rent to recover a tax increase depends on what he thinks his tenants would do in response to the rise, and whether he thinks other suppliers of housing are attempting to raise rents. Let us assume that in the event of a rent increase all tenants would move into a unit of equal floor space to their current accommodations, but of lower quality. Under this condition a landlord who felt that landlords owning higher quality property would raise rents could feel assured of shifting his tax forward and keeping his property fully rented. But at least one landlord would have to be acting under a wrong presupposition, because the owner of the highest quality would not be able to shift the tax under the assumption that tenants would move into lower quality housing. This assumption might be wrong; those residing in the highest quality may be willing to pay a higher rent rather than move into lower quality housing. At any rate, a landlord bases his ability to shift on being able to keep the property fully let at a higher rent. If he thinks he can do this, he thinks he can shift the tax increase. Landlords owning about 25 per cent

¹The supply of rental land could increase to the extent that farmers take up other occupations or retire and rent out their land rather than sell it.

of residential properties think they could do this to recover all or part of a 20 per cent tax increase (see Figure 7).

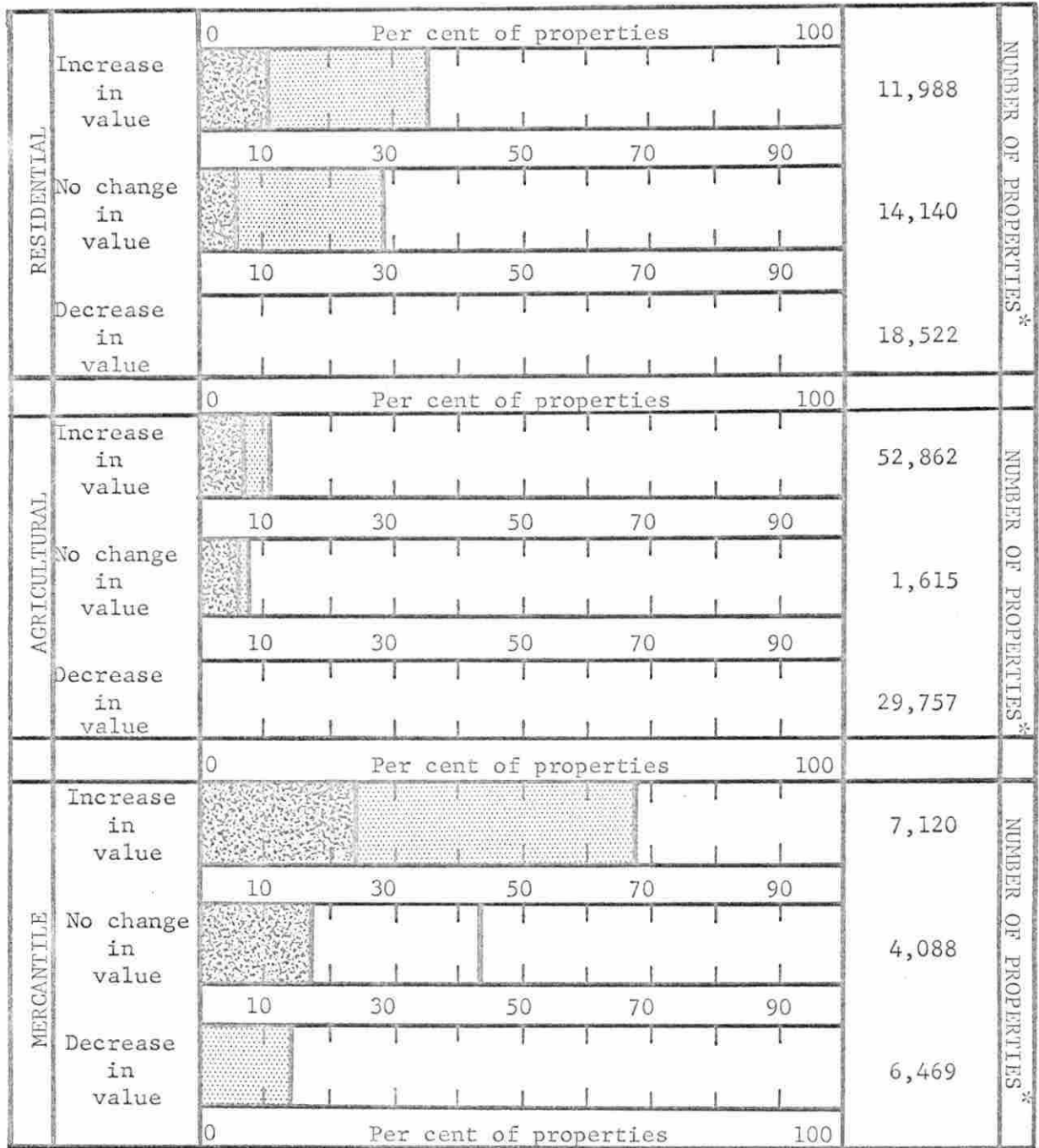
Mercantile property owners indicate a much greater ability to shift the tax onto tenants. This may be due to the uniqueness of a location or structure for a particular business and the ability of the tenant to bear a higher rent cost. These make his demand for a particular property less elastic than demands for agricultural or residential property.

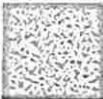


Demand for occupancy of a particular parcel of land or building is probably a major determinant of its value. We would expect owners whose properties have increased in value to possess greater ability to shift their property taxes directly onto tenants. Information from the ITS supports this idea. For each type of property a greater proportion of properties which had increased in value during the five years preceding the survey indicated an ability to recover a tax increase by increasing rent (see Figure 8). The direction of a change in value of a rental property seems to be a consistent determinant of shifting ability.

Ability to Recover the Tax by Increasing Prices

The ITS contained questions concerning direct forward shifting of taxes on properties used by the owner's business. The owner was asked how much of a 20 per cent tax increase he could recover by raising prices.

In economic theory on tax shifting, real estate taxes are generally analyzed in two parts--one part being the tax on land, the other being the tax on the improvement. In the case of a tax on agricultural real property, the part of the tax on land is predominant. Ability to shift depends on how the tax is assessed. If, for example, the tax is assessed according to



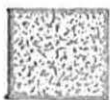
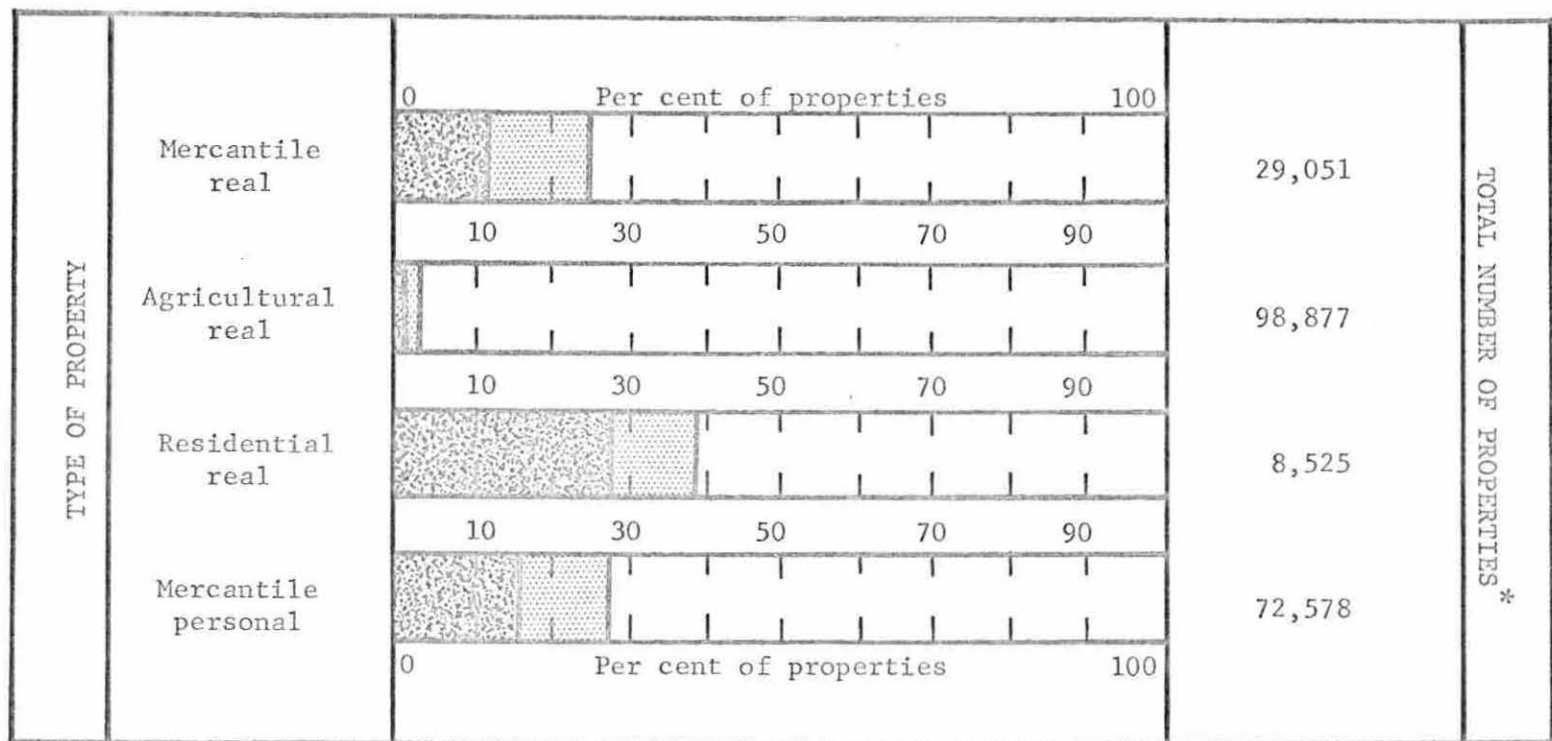
 Could recover all of tax increase
  Could recover part of tax increase
  Could recover none of tax increase

* Totals do not include properties whose owners failed to answer.

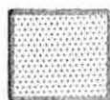
Figure 8. Direct forward shifting of property tax to renter, by change in value 1959-1965

Ricardian rent, the tax cannot be shifted and the burden will rest with the owner. According to this theory of rent, prices are determined by land which pays no rent. Therefore a tax on rent could not affect prices; there could be no forward shifting. Under this situation marginal land would be tax free (14, p. 258). If, however, the tax is assessed at a certain amount per acre, ignoring variations in the quality of the land, the tax may be shifted to the consumer because the price required to keep marginal land in production would have risen. Neither of these examples fits the case of the typical American tax on agricultural real property. Local property taxes are based on an assessed value which is determined by various characteristics and which is related to the market value of the property. What seems to be relevant in an analysis of agricultural property tax shifting is the response of the farmer to a rise in fixed costs. If he would restrict production or allow himself to go out of business, there is a possibility that the tax will be shifted. Observation of the economic behavior of farmers indicates that they are unlikely to curtail production if there is a property tax increase. Some may go out of business after a time, but the aggregate supply of agricultural produce is not likely to decline even then because of economies of scale and improving technology. Since the supply would not be decreased, shifting would not occur.

The answers represented by agricultural properties in the ITS coincide with what theory and behavioral assumptions hypothesize (see Figure 9). The few farmers who said they could recover all or part of the tax could have been mistaken, or they could have been dealing in a specialized service or product which would make it possible to shift the tax by virtue of the nature of the demand for the service--for example, a breeding farm.



Could recover all of tax increase



Could recover part of tax increase



Could recover none of tax increase

* Totals do not include properties whose owners failed to answer.

Figure 9. Direct forward shifting of the property tax, by type of property

Turning to urban real properties, the distinction between the tax falling on the site value and that falling on the building becomes more significant in theory. However, questions and answers in the ITS do not distinguish between a tax on the site and that on the building. Since the assessment is based on the combined value of both the site and the building, it does not seem very useful to apply the distinction between site and improvement in this analysis. Instead we shall consider the nature of the business and the conditions of demand and supply for its products or services, and the amount of tax relative to the volume of business.

Forward shifting primarily concerns mercantile properties. Very few agricultural property owners thought they could recover a tax increase by raising prices. A comparatively large proportion of property owners operating a business in connection with residential property felt they could recover a tax increase by raising prices (see Figure 9). This result could be due to the specialized nature of the service or product involved. The sample of residential properties used in businesses is too small to permit a more detailed analysis. The samples of mercantile personal and mercantile real property owners answering that they could shift the tax is large enough to analyze in more detail.

We can hypothesize that ability to recover the tax by raising prices is related to the type of business, the economic conditions in the area, and the ratio of sales to the amount of the tax increase. The ITS contains information on the type of business in which mercantile personal property was used. This information does not apply to mercantile real property even though it was owned by the same household. The unit of mercantile real

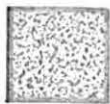
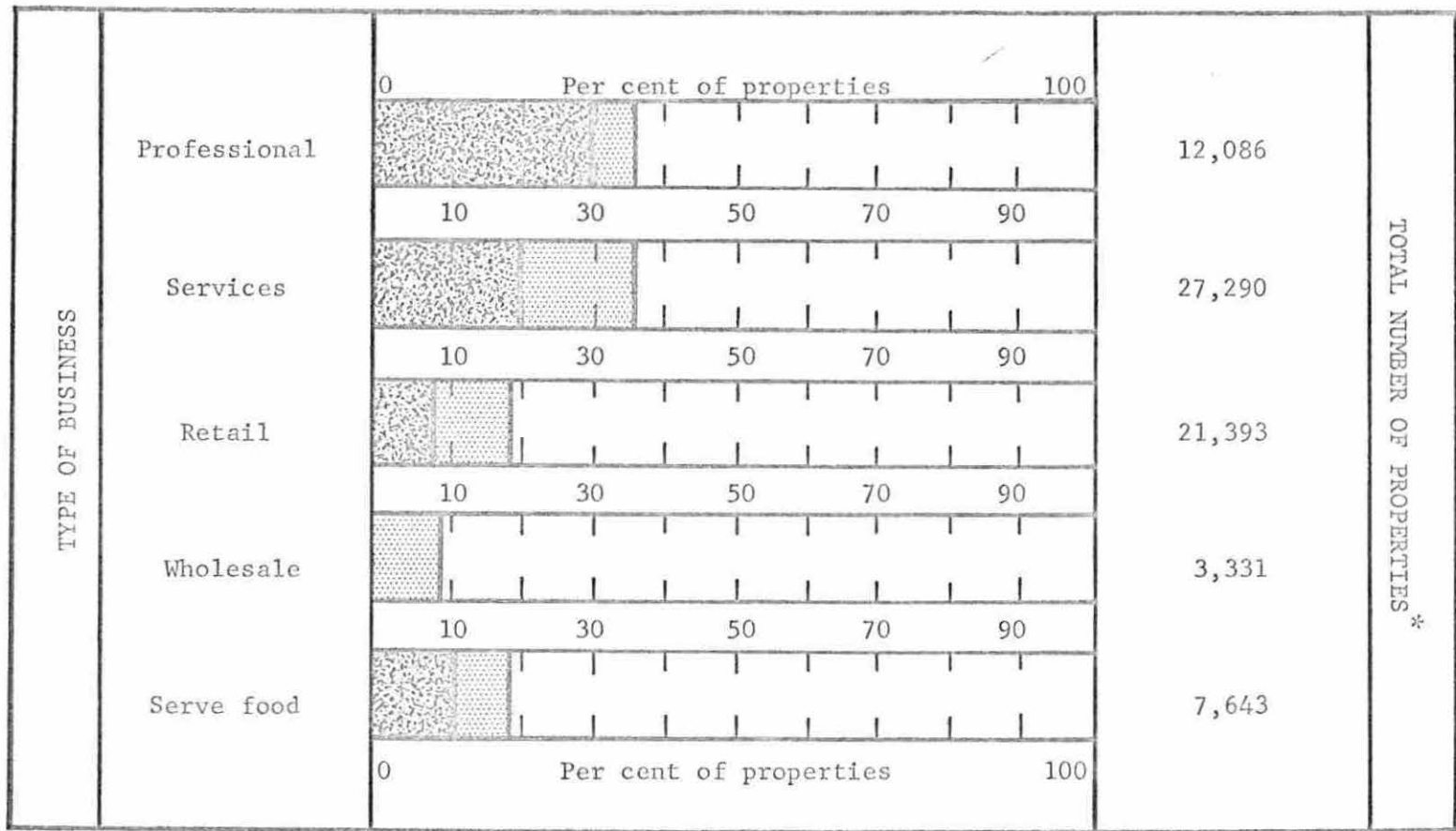
property selected for analysis in question 5¹ might not be used in the same business as the personal property. The mercantile real property may be rented out instead.²

Other information is available to do an analysis of who can recover the real mercantile property tax by raising prices. To observe the relationship between direct shifting and economic conditions, we can tabulate the answers given to this question by the size of the town in which the business is located and whether the property has increased or decreased in value during the five years preceding the survey, recognizing that these variables are but proxies for real indicators of economic conditions. We can also tabulate answers by the ratio of sales to the tax increase.

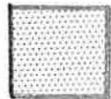
Mercantile personal property owners in professional activities--law, medicine, accounting and the like--indicate the greatest ability to shift the tax directly onto clients (see Figure 10). This might be due to the nature of the activity and the demand for it, or because the tax increase would be so small in dollars. A 20 per cent tax increase would mean an additional payment of less than \$25 for more than 80 per cent of those characterized as professional (see Table 4). A comparison of Table 4 with Figure 10 shows that businesses are arranged in order by the magnitude of taxes as they are in order of ability to shift taxes directly forward. Properties with lower taxes indicate a greater ability to shift taxes forward. Personal property taxes on wholesalers are quite high, possibly because of high valued merchandise or large inventories. Wholesalers also

¹See Appendix A.

²See pp. 13-14 above.



Could recover all of tax



Could recover part of tax



Could recover none of tax

* Totals do not include properties whose owners failed to answer.

Figure 10. Direct forward shifting of the mercantile personal property tax, by type of business

Table 4. Amount of a 20 per cent tax increase by type of business

Amount of tax increase	Type of business				
	Profes- sional	Service	Retail	Whole- sale	Serve food
\$ 0-\$ 24					
Number ^a	9,982	18,657	7,792	739	3,292
Per cent ^b	81.7	64.0	35.0	22.2	44.8
\$ 25-\$ 49					
Number	637	5,632	6,339	568	2,387
Per cent	5.2	19.3	28.5	17.1	32.5
\$ 50-\$ 99					
Number	1,116	2,785	4,261	0	284
Per cent	9.1	9.6	19.2	0.0	3.9
\$100-\$199					
Number	171	1,885	2,820	0	842
Per cent	1.4	6.5	4.7	0.0	11.5
Over \$200					
Number	315	180	1,023	2,024	543
Per cent	2.6	0.6	4.6	60.8	7.4
Total ^a					
Number	12,221	29,139	22,235	3,331	7,348
Per cent	100.0	100.0	100.0	100.1	100.1

^aTotals not adding to 100.0 are due to rounding.

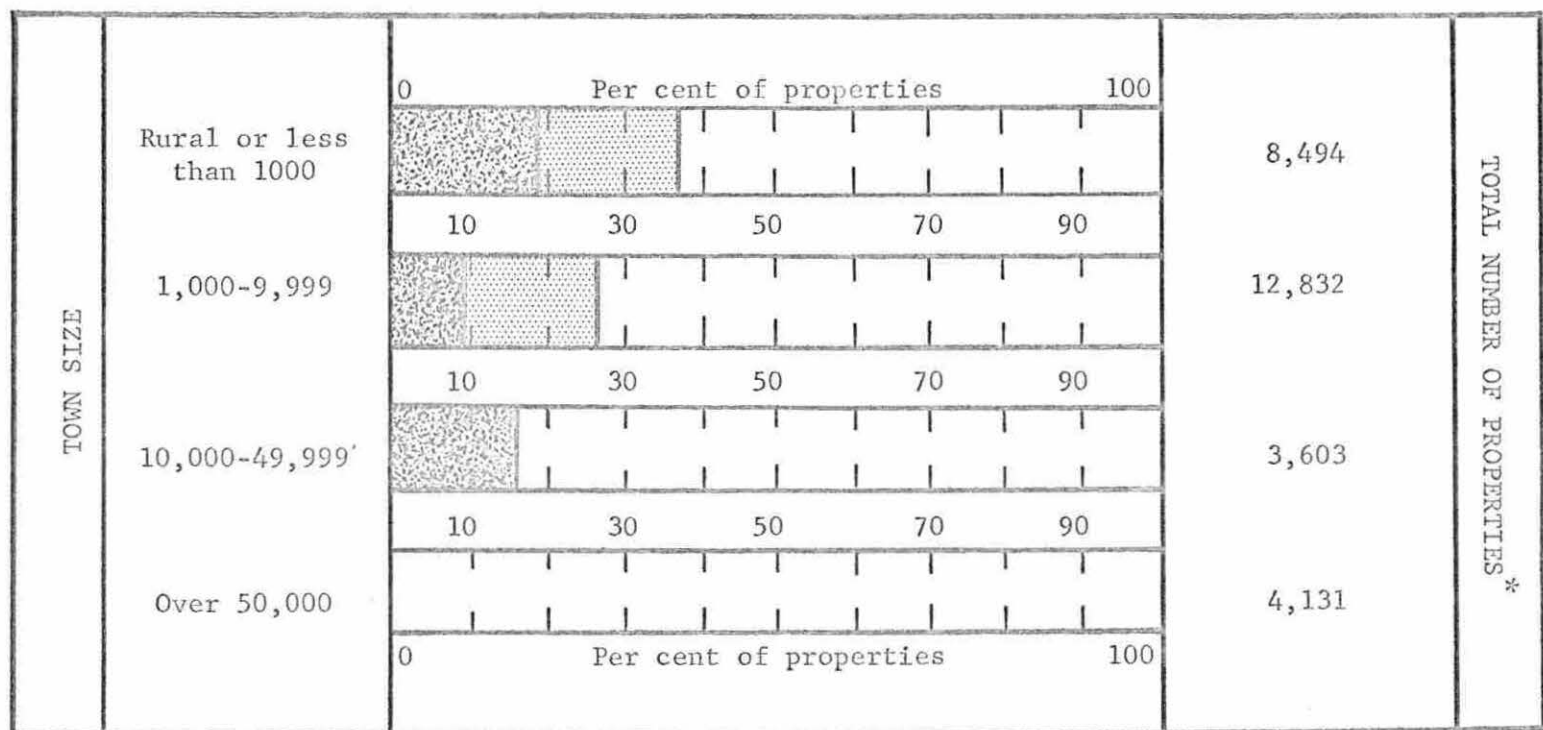
indicate a very low ability to shift taxes directly forward. This could be due to the large area to which they sell and the fact that their competitors, being far removed, would not be subject to the tax increase. Wholesalers also probably pay a large absolute amount of property taxes because of large inventories. The size of the market and the number and characteristics of competitors probably affect the ability to directly shift the tax.

Ability to shift the tax forward seems to decrease slightly as the

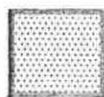
town size increases (see Figure 11). This might be expected if demand for the product or service of a particular supplier becomes more elastic as the town size increases. In a larger town the number of substitutes, alternatives and competitors is larger than in a small town. If this causes demand to become more elastic, it could be more difficult to shift the tax in a large town. Large metropolitan areas are also more likely to have different tax rates in districts accessible to consumers. A businessman's opportunity for recovering a tax by raising prices is decreased if his competitors are not subject to the tax.

Unlike the answers about the shifting of rental property taxes, the pattern of answers about the shifting of business property taxes does not indicate a consistent or strong relationship between shifting ability and changes in the value of property (see Figure 12).

We would expect a business with a high ratio of sales to the amount of the tax increase to be able to recover the tax increase through raising prices more readily than a business with a lower ratio. Where the amount of the tax is very small relative to sales, shifting the tax forward would require only a small, perhaps unnoticeable price increase. On the other hand, where the tax is small relative to sales, it may be easier for the business to absorb the tax with no noticeable decline after tax net revenue. Therefore, businesses may not even try to raise prices. The proportion of properties used in a business with a high sales to tax increase ratio able to recover the tax by raising prices is greater than that for properties with a lower sales to tax increase ratio. This difference is not as great as we would expect were this ratio a major determinant of shifting ability. It should be noted, however, that where sales are more than 1000 times as



Could recover all of tax increase



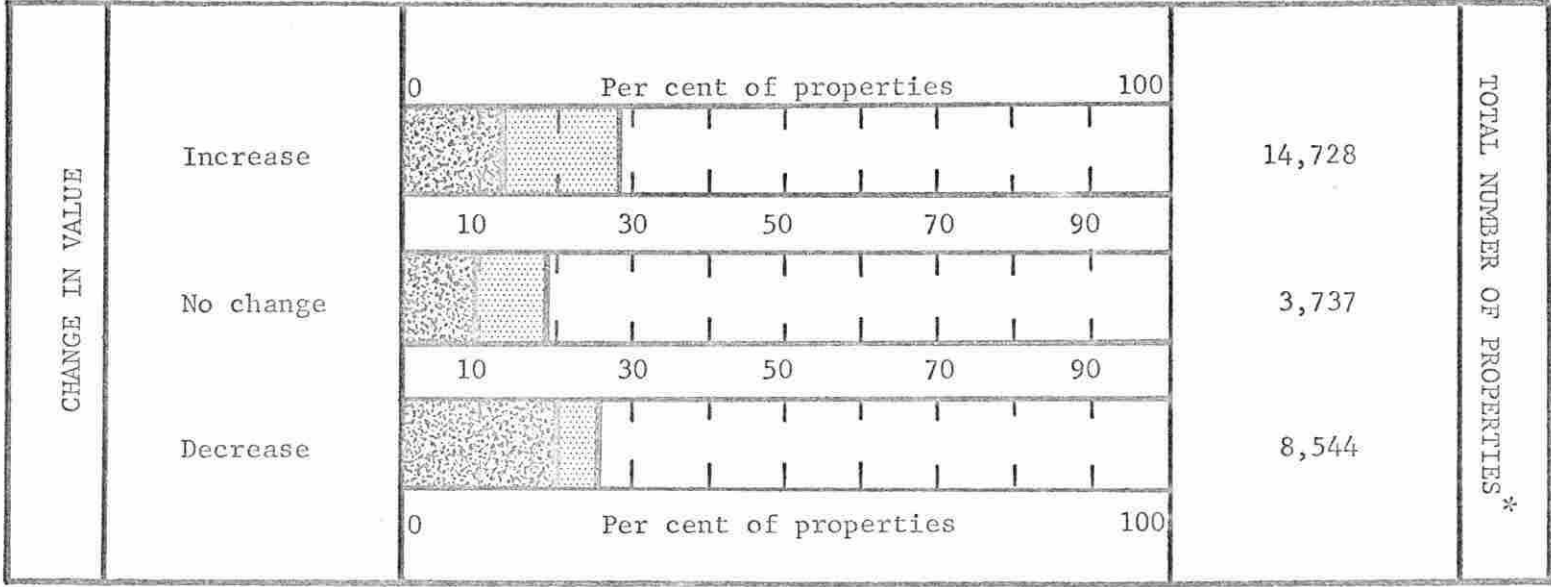
Could recover part of tax increase

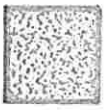
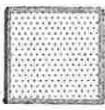



Could recover none of tax increase

*Totals do not include properties whose owners did not answer.

Figure 11. Direct forward shifting of the mercantile real property tax, by town size



 Could recover all of tax increase
  Could recover part of tax increase
  Could recover none of tax increase

* Totals do not include properties whose owners did not answer.

Figure 12. Direct forward shifting of the mercantile real property tax, by change in the value of the property during the previous five years

Table 5. Direct shifting ability by the ratio of gross sales to the amount of a 20 per cent increase in taxes on mercantile real property

Gross sales/ tax increase	Amount of tax increase recoverable			Total ^a
	All	Some	None	
Smaller than 1000				
Number	1,446	2,184	12,722	16,357
Per cent	8.8	13.3	77.8	99.9
Larger than 1000				
Number	1,023	1,119	4,758	6,900
Per cent	14.8	16.2	69.0	100.0

^aTotals not adding to 100.0 are due to rounding.

large as the tax increase, it would be difficult to raise prices by an amount which would exactly recover the tax. With a sales to tax increase ratio of 1000, the price increase need be only 0.1 per cent or one cent on a one dollar item, or \$1 on a \$1000 item. Most merchants would consider this such an insignificant amount that they would not respond to the tax increase. We should not, however, conclude that the merchant could not shift the tax or is not shifting a large portion of his total property taxes. He simply would not bother to respond to a tax increase which is trivial compared to his total costs and sales. If the merchant did respond by increasing prices, he would surely recover several times the amount of the tax increase. He might list higher property taxes among reasons for a substantial price increase when in fact the tax increase per unit of sales is less than one per cent. Thus the total price increases for the 2142 properties with $\frac{\text{Gross sales}}{\text{Tax increase}} > 1$ who said they could shift the tax increase

could well be an amount greater than the tax increase payable on the property.

Price changes will not affect the revenue productivity of a tax, but they will affect the incidence of the tax. A tax increase on about 25 per cent of mercantile real and personal properties in Iowa would be met with price increases in the related goods and services. Thus the burden of a sizeable portion of mercantile property taxes will be passed on to consumers.

SUMMARY

This study analyzes information collected in a survey of Iowa property owners. The answers of respondents are used to estimate the economic responses of property owners collectively to a property tax increase. Analysis of the patterns tries to understand the possible impact of these collective responses on the goals of tax policy. There are five main forms of response: tax capitalization, investment decrease, cost reduction, tax transformation, and price increase.

Tax Capitalization

At least 40 per cent of all Iowa properties and 50 per cent of income producing properties were owned by Iowans who felt a tax increase would decrease the value of their property. Thus less than 100 per cent of the tax increase on 40 to 50 per cent of Iowa properties can be shifted. Conversely 50 to 60 per cent of Iowa property was owned by persons who felt a tax increase would not decrease property values.

Effect of a Tax Increase on Investment

Discouragement of investment caused by a tax increase could spread the burden of the tax to labor, savers, renters, and consumers. A 20 per cent increase in property taxes would cause owners of 60 to 70 per cent of real properties in Iowa to reduce or postpone investment in their properties. A reduction in property repair and construction would mean a smaller demand for loanable funds and the services of the construction industry. These results could in turn reduce interest rates to savers and reduce the hours

worked and incomes of laborers in the construction industry. Consumers of housing services would face a decrease in the supply and quality of housing as a result of decreased investment. In areas where the demand for housing is growing, the lack of investment would quickly create a shortage and permit landlords to raise rents and thus shift the tax onto tenants and buyers. Once this occurs, the tax increase should no longer be a deterrent to investment.

In many small towns, however, demand is not growing, and the tax increase might cause people to leave and thus add to the local supply of housing. Any decline in repair and upkeep would accelerate the deterioration of the local housing supply. The effect of a tax increase is probably quickly responded to by rent and price increases in a booming real estate market while in a stagnant or deteriorating market, a tax increase has long negative effects on incomes, investment and housing quality.

Only about 30 per cent of mercantile personal property owners in Iowa would reduce their investment because of a 20 per cent increase in property taxes. Mercantile personal property includes store inventories and working capital items which directly affect the availability of goods to purchasers. Therefore, any cutback in investment would directly affect supply. Where demand is strong this would quickly result in forward shifting while in a small town with a weak demand, this cut in supply might mean loss of customers to merchants in larger towns causing further income loss and investment reduction. A decline in investment by only 30 per cent of merchants and businessmen would probably result in a reduction of total supply sufficient to permit other merchants to raise prices or increase sales enough to cover the amount of their tax increase. Thus shifting may take place and

merchants who do not personally perceive their ability to shift will be able to recover the tax.

Effect of a Tax Increase on Cost Reduction

The ITS showed that taxes on very few properties could be recovered by reducing costs. In most cases less than 2 per cent of properties could recover a tax increase in this way. Owners of 5.6 per cent of mercantile real properties felt they could recover part of a tax increase by reducing costs. Since "costs" are a shorter-run variable than investment, we conclude that a property tax increase is expected to continue and thus has much greater effects on investments than costs.

Incentive Effect of a Tax Increase

About 10 to 25 per cent of Iowa properties of all types were owned by persons who felt they could recover a property tax increase by increasing production and sales. Thus the tax increase would encourage the more efficient use of resources. Agricultural property owners were predominant among owners who thought they could recover a property tax increase in this way. This form of response called tax transformation recovers the tax through intensifying the production process. The result is an increase in supply. Thus in its aggregate effect, tax transformation is approximately opposite to shifting which comes about through reduced investment and supply.

Direct Shifting of Taxes onto Tenants

There is considerable variation among property types in their ability to recover a property tax increase by raising rents. Owners of less than

10 per cent of agricultural rental properties indicated that they could raise the rent and shift the tax onto renters. The owners of residential and mercantile rental properties reported they could raise the rent and recover the rent in 22.8 and 44.5 per cent of the cases respectively. Properties which had experienced an increase in value during the five years preceding the survey reported a distinctly greater likelihood of shifting the tax increase forward to tenants.

Direct Shifting of the Tax Increase onto Consumers

When faced with a property tax increase, 2 to 25 per cent of Iowa property owners reported they would raise the prices of the products or services they sell. A price rise prompted by a tax increase may cover more or less than the tax increase. It might move the business closer or farther away from a profit maximizing price. There is much disequilibrium and uncertainty as to what is profit maximizing behavior. Shifting which takes place through immediate price increases is rarely treated in theoretical works on shifting because theory assumes that the entrepreneur is charging the profit maximizing price which is unaffected by a change in fixed costs.

Economic theory would lead us to believe that agricultural property taxes cannot be shifted by raising prices because farmers are "price takers" not "price makers." Consistent with this we observed from the ITS that only about 2 per cent of agricultural properties had owners who thought they could recover any of a tax increase by raising prices. This is low compared to 25 per cent of mercantile properties whose owners felt they could recover at least part of the hypothetical tax increase by raising

prices.

Nearly 30 per cent of mercantile personal property owners would try to recover the tax increase by raising prices. Types of businesses ranked from greatest to least inclination to raise prices and shift the tax on personal property forward are professional, service, serve food, retail and wholesale.

The assurance that a property owner would raise prices and shift mercantile real property taxes forward seems to increase with the ratio of sales to tax. That is, it is easier to shift a tax increase of \$1000 with sales of one million dollars than with sales of one-half million dollars. This relationship is not perfect because the survey revealed many property owners who disagreed with the majority.

The extent to which property taxes are actually shifted forward to consumers can be only roughly indicated on the basis of property owners' opinions. These opinions reflect marginal behavior by specific firms. The reactions reported are probably immediate and the effects of others' decisions over longer periods are probably not considered. It is difficult, actually, for a property owner to have a clear picture of his own long run shifting ability. Nevertheless, it appears that property owners do have some ability for direct shifting through raising prices and rents immediately. Perhaps 30 per cent or more of a property tax increase on mercantile property would be immediately shifted onto consumers. About 40 per cent of a tax increase levied on mercantile rental properties would be shifted onto tenants. These tenants would probably in turn shift it onto customers. Somewhat less, perhaps 25 per cent of a tax increase on residential rental properties can, in the opinion of the owners, be shifted immediately onto

tenants by rent increases. Only about 10 per cent or less of a tax increase on agricultural properties which are rented out could be recovered, in the opinion of the owner, through immediate rent increases.

In addition to shifting which takes place through immediate price increases, there is shifting which comes about through the processes of declining investment and reduction in supply. Since we have no information about just how much each property owner would reduce investment or how fast, if ever, the reduced investment would create a shortage sufficient to raise prices, we cannot estimate how much or how soon shifting will result from a smaller amount of investment. We do know that a large number, 60 to 70 per cent, of property owners would be more reluctant to make investment in their properties if taxes increased. It seems that in all growing demand areas this would quickly result in a sufficient shortage to raise prices enough to cover the tax increase. In the short run, from the sheer number of property owners who say they would reduce investment, we can safely conclude that a tax increase would decrease the work and income of the construction industry.

While shifting of taxes on income producing property definitely takes place, variation in answers among owners of different types of properties located in different places suggests that shifting takes place in varying amounts and at varying speeds. A property owner's ability to shift taxes is an individual characteristic determined by the type of property and local demand and supply conditions as well as his own personality, education and ability as a businessman.

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APPENDIX A

Instructions

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Questions applicable

- Real estate of any type - - - - -White pages, Questions 1 through 5
 Mercantile personal property- - - - -Green page, Question 6
 Agricultural personal property- - - - -Pink page, Question 7
 Personal property - residential only - - - Skip all of Section IV
 (No real estate owned)

PROPERTY VALUE

(Interviewer: If there are two or more lines for real estate filled out in Section III, they may need to be consolidated because the respondent thinks of the parts as a unit. If there are two or more real properties, ask Question 1; if not go to Question 2.)

- Are two or more of the properties in your opinion really sub-parts of the same unit? That is, are they the same class of property (mercantile, agricultural, residential) used for the same specific purpose (store, farm, private dwelling, etc.) and generally considered a unit? (Interviewer: Enter one or more property numbers in Line a to make up the economic unit of Line b, making certain all real properties are used.)
- What is each property unit? (Interviewer: Write a short title in Line c to indicate the purpose for which the unit or property is used, e.g., farm, furniture store, family home, duplex, apartment house, vacant lot, factory, etc.)
- (Interviewer: Refer to the short title of Economic Unit 1 and complete Line c through k for Unit 1, and then repeat for Unit 2, and so on.)

a. Property numbers (from Section III, col. 1)				
b. Economic unit number	1	2	3	4
c. What is the unit? (1. farm, 2. store, 3. home, 4. vacant lot, 5. factory, 6. other - describe in margin)				
d. How much would the unit bring if you sold it today?				
e. How much would the defined area have sold for 5 years ago (1960) as it was then?				
f. What was the major cause of change in value during the last 5 years? (e.g., 1. improvement added, 2. improvement removed, 3. general change in local property values, 4. depreciation, 5. other - describe in margin)				
g. Is the unit rented out to someone else? (enter Yes or No)				
h. (If Yes in g) What is the yearly rental? (If No in g) About what would the yearly rental be if you were to rent it out?				
i. Is this unit used in the owner's own business? (e.g. used in his store, farm, office, etc.) (Record Yes or No.)				
j. (If Yes in i) What were the gross sales or receipts from this enterprise in 1964?				
k. What was the total tax bill on this property (economic unit) in 1964?				

4. In which of the above economic units is your residence located?

Economic unit No.
or "none"

(Interviewer: If there are two or more economic units of the same class (mercantile, agricultural, residential) select one as instructed on random number table attached to your clipboard (e.g. if there are two stores and one house, select one of the stores and also use the house for the section below.)

5. Over the past five years, real estate taxes in Iowa have risen, on the average, 50 per cent. In answering the following questions, you will be helping us to understand the ways in which business and investment might be affected if this trend were to continue. Since we are interested in your reaction only to a tax change, it will be necessary to assume that all other business conditions remain just as they are now.

Considering Unit number ____ (Line b, question 5) let us suppose that next year the tax on this property rose 20 per cent. That would mean that instead of \$_____ (from line k, question 5) you would have to pay \$_____.

(Interviewer: Ask questions a to g as appropriate. Then take the next unit and ask questions a to g, and so on.)

Economic unit			
(a) What do you feel would happen to the market value of this property as a result of this tax increase? (1) Increase: By what per cent?			
(2) Decrease: By what per cent?			
(3) Remain unchanged			
(b) How would this tax increase affect your decisions concerning investment in this property?(check one)			
(1) Encourage investment			
(2) Discourage investment			
(3) Would not affect investment decisions			
<u>Interviewer:</u> Ask questions (c) and (d) only about properties that are rented out (i.e. have Yes in line g of question 5)			
(c) How much, if any, of this tax increase could you recover by increasing the rent? (Per cent of tax increase or dollars recovered)			
(d) How much, if any, could you recover by cutting costs? (Per cent of tax increase or dollars recovered)			
<u>Interviewer:</u> Ask questions (e) through (g) only about properties that are not rented out but used by respondent in his own business (i.e. Yes in i of question 5)			
(e) How much, if any, of this tax increase could you recover by increasing the price of what you sell? (your services) (% or dollars)			
(f) How much could you recover by increasing volume of business without increasing wages? (% or dollars)			
(g) How much, if any, of this tax increase could you recover by reducing costs other than labor costs? (% or dollars)			

(Interviewer: If Section III contains a "mercantile personal property" entry, ask Question 6.)

6. a) What kind of a "business" is this? _____
(short title description)

Over the past five years, property taxes in Iowa have risen, on the average, 50 per cent. Property taxes on mercantile personal property change too. In answering the following questions, you will be helping us to understand the ways in which businessmen might be affected by changes in property taxes. Since we are interested in your reaction only to a tax change, it will be necessary to assume that all other business conditions remain just as they are now.

b) What were your taxes on mercantile personal property for 1964? \$ _____

Let us suppose that next year the tax on this mercantile personal property rose 20 per cent. That would mean instead of \$ _____, you would have to pay \$ _____.

c) How would this tax increase affect your decisions concerning investment in inventory and equipment? (by what per cent)

- 1) Would increase inventory and equipment _____ per cent
- 2) Would decrease inventory or equipment _____ per cent
- 3) Would not affect investment decision _____

d) How much, if any, of this tax increase could you recover by increasing the price of what you sell, or your service? (Per cent of tax increase or dollars recovered) _____

e) How much, if any, could you recover by increasing sales without raising prices or costs? (Per cent of tax increase or dollars recovered) _____

f) How much, if any, of this tax increase could you recover by reducing costs? (Per cent or dollars) _____

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(Interviewer: If Section III contains an "agricultural personal property" entry, ask question 7.)

7. a) What were your taxes on livestock and machinery for 1964? \$ _____

Over the past five years, property taxes in Iowa have risen, on the average, 50 per cent. Property taxes on agricultural personal property change too. In answering the following questions, you will be helping us to understand the ways in which farmers might be affected by changes in property taxes. Since we are interested in your reaction only to a tax change, it will be necessary to assume that prices and farm programs would remain the same as they are now.

Let us suppose that next year your tax on livestock and machinery was 20 per cent higher. That would mean that for the same livestock and machinery, instead of \$ _____ (from a) above), you would have to pay \$ _____.

b) How would this affect your decisions about investing in livestock and machinery? _____ What per cent?

1. I would increase livestock _____ per cent
2. I would increase machinery _____ per cent
3. I would decrease livestock investment _____ per cent
4. I would decrease machinery inventory _____ per cent
5. Would not affect investment decision _____

c) How much, if any, of the tax increase could you recover by increasing production? (Per cent of tax increase or dollars recovered) _____

d) How much, if any, of this tax increase could you recover by reducing costs? (Per cent or dollars) _____

e) If personal property tax were removed from cattle, would you increase the number of cattle you have? Yes ___ No ___

f) If personal property tax were applied to hogs, would you decrease the number of hogs you raise? Yes ___ No ___

APPENDIX B

Table 6. Properties with owners answering that the tax increase could be completely shifted as well as capitalized

Type of property	Number of properties	Per cent of properties
Mercantile rental	720	3.6
Mercantile used in owner's business	1213	4.2
Agricultural rental	1402	1.6
Agricultural used in owner's business	0	0.0
Residential rental	0	0.0
Residential used in owner's business	0	0.0

Economic theory requires a mutually exclusive relationship between tax shifting and tax capitalization. Using this proposition we can check the consistency of answers given in the ITS. Table 6 shows that a very small proportion of properties are represented by owners who felt that they could shift the entire tax burden onto consumers or tenants as well as that the tax would reduce the value of the property. This combination of answers conflicts with conventional theory. However, theory does not entertain the possibility that the present owner can shift the tax, but that a prospective buyer might not be able to because of a change in the use of the property or the business practices of the new owner.

The amount of discrepancy between actual answers and what theory would

predict seems insignificant. The uncertainty of answers has been noted previously and it is recognized that this is not a perfect means for evaluating the reliability of answers.