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I accept full responsibility for the content and accuracy of this study.

Timothy L. Hunt
February 1985

EXECUTIVE SUMMARY

In this study, Michigan's business tax costs are assessed relative to those in the other Great Lakes states. The Great Lakes states are defined as Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. Total state and local business tax costs are defined as including workers' compensation, unemployment insurance, gross receipts, corporate income, franchise, value added, property, and sales taxes. We used the most current or near-term provisions of the tax codes through about mid-1984. The eight taxes considered in this study constitute virtually all of the state and local tax burdens for most business firms. We also estimated the effect on the tax burdens across the states of deducting state and local taxes from income on federal tax returns and the effects of property tax abatements that may be granted locally to spur business expansion.

The state and local tax costs were estimated for eight hypothetical firms varying in size and other relevant operating characteristics. The firms were assumed to be identically situated in each state in order to isolate the influence of state controlled costs of doing business. Although the firms considered in this study are hypothetical, the utilization of actual industry averages in constructing their detailed characteristics insures that they are representative of firms in their industries.

It has been suggested that a reasonable goal of public policy in Michigan is that state and local taxes for business firms should at least approach the regional averages. From this point of view, the overall results of this study are promising in that the state is certainly within reach of the regional average for state and local business tax costs. In fact, the tax burdens for the three small firms in Michigan were all virtually identical to the Great Lakes averages for those firms. The same is true for one of the large firms. So four of the eight hypothetical firms in Michigan are already at the regional averages.

The problem areas in the Michigan business tax structure appear to be workers' compensation and property taxes. Workers' compensation costs in

Michigan have already received considerable attention from the Michigan legislature. The major reforms adopted in 1982 have reduced the costs of workers' compensation insurance for many firms, sometimes dramatically. The current trends are also encouraging in that the number of claims have fallen significantly. However, the state remains at least 30 percent higher than the regional average for workers' compensation costs despite narrowing the gap in recent years.

The second problem area in the Michigan business tax structure is property taxes. Without property tax abatements, the hypothetical firms in Michigan had the highest property taxes in the region. Even with abatements, Michigan's position did not improve as much as one might expect because three other Great Lakes states (Illinois, Indiana, and Ohio) also have abatement programs. Specifically, property tax costs for the hypothetical firms in Michigan, including the effects of property tax abatements, remained from 6 to 30 percent higher than the regional average. Although the margin of error for our estimates is probably the greatest for property taxes, it remains likely that Michigan's property tax costs are significantly higher than the regional average.

Outside of workers' compensation and property taxes, Michigan is most unlike the other Great Lakes states in the way in which it taxes firms which are currently experiencing economic hardships and do not qualify for the small business credit on the Michigan Single Business Tax (SBT), probably cyclically sensitive firms. This result is caused primarily by two features of the Michigan tax system. First, the tax base of the SBT is broad and includes all of the value added of the firm versus the narrow tax base of the corporate income tax which basically includes only profits. Therefore, a significant tax liability may remain with the SBT even though the firm is experiencing losses. Second, the Michigan unemployment insurance system is more steeply experienced rated than elsewhere, so a bad unemployment record raises unemployment insurance costs relative to the other Great Lakes states. It should be emphasized however, that the state and local tax costs of such cyclically sensitive firms in Michigan would undoubtedly be much closer to the regional average if they were calculated over the entire course of the business cycle.

This brief discussion of the unique way in which Michigan taxes firms with losses highlights one of the other general conclusions of this study. The tax statutes of all of these states are so complex that they give rise to the possibility of a wide range of comparative results across firms and states. Therefore, it may be neither possible nor advisable for a state to be average in all cases. What is important is that the citizens of each state are fully cognizant of the impacts of their tax structure.

The good news from this study is that there appear to be a number of real advantages of the Michigan business tax structure. First, the Michigan unemployment insurance tax system rewards firms with average or better than average unemployment records. Such firms in Michigan do not pay much higher unemployment insurance rates than in most of the other Great Lakes states, although it is true that UI costs have been rising absolutely throughout the region. Second, for many firms experiencing average or above average profits, the Michigan SBT probably imposes no higher burdens than the corporate income taxes of other states. Furthermore, in absolute terms the SBT can be less than the costs for workers' compensation, unemployment insurance, or property taxes. Third, the business portion of sales taxes in Michigan appears to be easily the lowest in the region.

Finally, Michigan appears to be attractive for small, new firms. These firms receive very favorable treatment under the SBT; in most cases their SBT liability is much less than would be paid under the corporate income taxes of the other Great Lakes states. New firms in Michigan are also absolved from paying any federal penalty charges on the state's unemployment insurance debt through a state credit on the SBT. Furthermore, the state shares the lowest unemployment insurance rates for new firms with one other state in the region. Given these facts, it appears difficult to defend the notion that the Michigan tax structure retards firm start-ups.

In sum, Michigan's state and local business tax costs for the hypothetical firms are average to above average relative to the other Great Lakes states. State and local tax costs net of federal tax deductions generally ranged from about 1 to 2 percent of sales. Somewhat surprisingly, we found the payroll

taxes for workers' compensation and unemployment insurance to be as high as one-half of the total state and local tax costs. Michigan's business tax costs are above the regional average for workers' compensation and property taxes and significantly below the regional average for the business portion of sales taxes.

It should be pointed out that the historic economic data do not conclusively support the contention that low business taxes alone have spurred economic development. Minnesota has clearly had the best employment growth rate of any of the Great Lakes states in the last 26 years, yet Minnesota also has the highest state and local business tax costs of the region. On the other hand, the economic performances of Indiana and Michigan appear to be identical in terms of employment growth rates, yet business taxes are higher in Michigan than Indiana. None of this is meant to imply that still higher taxes will engender even higher growth any more than lower taxes will do likewise. Regional economic growth remains a complex phenomenon that continues to defy simple explanations.

This study has tried to add to the base of knowledge about business tax costs. Important decisions will be made in the years ahead in Michigan about what levels of public spending are appropriate, for what purposes, and who will bear the direct burden of the taxes to support that spending. Only the citizens of Michigan can answer these difficult questions.

I. INTRODUCTION

It is common knowledge that Michigan's economic performance in the past few years has been well below the national average. In such an environment it is not surprising that some commentators have identified state and local business tax costs as the major culprit in explaining the state's plight. In fact, one source is often referenced to support allegations that Michigan is unfriendly toward business, namely, the Alexander Grant and Company business climate studies which have been published annually since 1979.

There is certainly no shortage of business tax cost comparisons. Business climate studies generally utilize easily available aggregate state data about one or more tax costs, numerous other costs such as wages, and even noncost factors such as education and the quality of life, all combined into a single index. Aggregate state tax studies, on the other hand, restrict their attention to statewide tax data in an effort to assess the burden of taxes for all business firms or all manufacturing firms in a state relative to the sales or assets of those firms. Finally, accounting studies estimate the state and local business tax costs for individual hypothetical firms.

Given the existence of a large body of research, it is surprising that there is so little agreement about the actual burden of state and local business taxes on firms. That is a reflection of many factors. First, tax issues by their very nature tend to be contentious. It is in the self-interest of firms to lobby for the lowest possible taxes to enhance profits, while state tax administrators might benefit from maintaining the status quo of that system. For whatever reasons, adversial relationships frequently develop in discussion of tax matters and this obviously has the potential to obscure the facts. Second, the tax laws themselves are sometimes so complex that comparisons within and across state and local jurisdictions are both elusive and difficult. Finally, there are many measurement problems inherent in the existing tax data and in using that data for interstate comparisons. For example, data on property tax collections from business firms may not be maintained separately from those for private individuals. The same situation often holds for the business portion of sales taxes. Thus, business property and sales taxes must somehow be approximated. For these and other reasons our knowledge of the burden of business taxes appears to be inadequate.

The purpose of this study is to assess Michigan's business tax costs relative to the other Great Lakes states. The Great Lakes states are defined as Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. Total state and local business tax costs are defined as including workers' compensation, unemployment insurance, gross receipts, corporate income, franchise, value added, property, and sales taxes. The modest goal of this study is to improve the objective analysis and measurement of differences in tax costs across states. As will be explained later, the approach used here is not without its own shortcomings, but it is offered as an improvement over some of the earlier studies.

This report is divided into eight sections. The introduction begins by looking at the employment growth rates of the individual Great Lakes states and the region as a whole relative to the United States. This historical perspective serves as a framework within which to better understand Michigan's overall economic performance. That leads to a discussion of the general limitations of any business tax cost study and a brief review of selected approaches and studies. Then the method of this study is described, including its uniqueness and limitations.

Sections II through VI of the paper discuss the individual taxes. It should be noted that Michigan's value added tax, the Single Business Tax, is compared to the aggregate of the gross receipts, corporate income, and franchise taxes of the other Great Lakes states. Within each of the sections, the assumptions and estimation procedures are presented first, followed by the empirical results. Since states can substitute easily between taxes in supporting the operations of government, except perhaps for workers' compensation and unemployment insurance, one should not place too much importance on the individual comparisons. The estimates of the total tax burden--perhaps the most important analysis of this study--are contained in Section VII, followed by conclusions in the last section.

The focus of this paper is the analysis of the relative tax costs across the states. That includes considerable discussion of assumptions, methods, and details of the study such as the tax rates and significant provisions of the state statutes. This approach permits careful evaluation of the study, but it

still does not include all of the technical support for the tax cost calculations because the full documentation is voluminous. For example, separate state income tax returns were completed for eight firms across six states for a total of 48 state tax returns. We hope that this paper contains sufficient documentation for most purposes, but full technical documentation may be obtained directly from the W. E. Upjohn Institute for Employment Research for the cost of reproduction.

Unquestionably the most surprising findings of this study are: (1) the tax burdens of Michigan firms are not significantly out of line with those in the neighboring Great Lakes states; (2) the tax statutes are very complex, which leads to a variety of comparative results for the individual taxes across firms and states; and (3) the range of variation across the states in the total tax burdens appears to be far less than indicated by some of the earlier research.

Employment Growth Rates in the Great Lakes States Relative to the U.S.

One of the ways to evaluate the overall economic performance of a state or region is to look at the net new jobs created compared to the total available jobs in each state or region. That is done in Table I-1 where employment growth rates for manufacturing and total nonagricultural employment in the Great Lakes states are presented for various periods of time. The overall period encompasses 26 years, 1957-1982. The two subperiods, 1957-1969 and 1970-1982, are examined to explore the possibility that the employment growth rates might differ over such a long span of time. It should be emphasized that the employment growth rates in the table are actually averages for the period expressed as differences from the U.S. average. These mean differences make it possible to determine whether a state's or region's employment growth rate is higher or lower than that of the United States.

In general, the Great Lakes states performed below average for the overall period, 1957-1982. Specifically, the mean difference of -.8 percent indicates that the region grew annually almost 1 percent less than the United States for both manufacturing and total nonagricultural employment. This difference in

performance was statistically significant,[1] which means that the observed slower growth of the Great Lakes region was not likely caused by sampling variability.

The most startling features of Table I-1 are the differences across the two subperiods. In general, the overall performance of the Great Lakes region relative to the U.S. deteriorated significantly in the later subperiod, 1970-1982. In the earlier period, the economic performance of the Great Lakes region relative to that of the United States, although negative, was statistically insignificant. That means the economic performance of the region and the U.S. are statistically indistinguishable from each other. In the later period, however, the mean difference is statistically significant. For the 12 years, 1970-1982, the employment growth rate of the Great Lakes region was about 1.2 percent less than that of the United States.

The economic performance of the individual states in the Great Lakes region is also interesting. Minnesota has clearly had the best employment growth rate of any of the Great Lakes states relative to the U.S. over the entire period 1957-1982 as well as the two subperiods, while Wisconsin's performance appears to be the closest mirror of the United States. Indiana and Michigan, on the other hand, have had virtually the same employment growth rates over the three sample periods. In both of these states, the employment growth rates deteriorated in the later subperiod. Finally, the worst economic performance in the region appears to be shared by Ohio and Illinois.

It is difficult to draw conclusions from the information portrayed in Table I-1, but it does provide the historical context for this study of business tax costs in Michigan relative to the other Great Lakes states. In general, Michigan's relative economic performance is not that much different from the region as a whole. With the exception of Minnesota, employment growth rates in the Great Lakes states have tended to be less than those in the U.S.

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[1] Statistically significant usually means that the estimate is significantly different from zero at the 5 percent level. This standard convention is followed throughout the paper.

for a long time. It does appear, however, that the relative economic performance of the region worsened significantly in the period 1970-1982.

Limitations of Business Tax Cost Studies

Nearly all business tax cost studies suffer from a number of problems or weaknesses. Since these weaknesses tend to be shared among all of the studies, they are discussed prior to the review of selected studies and the presentation of the specific method utilized in this study. These weaknesses include the failure to consider tax incidence, the failure to consider nontax costs, and the failure to consider the benefits of taxation, i.e., the value of the services purchased by expenditures of tax receipts.

Tax incidence refers to the question of who bears the ultimate burden of any tax. Although there is usually no doubt about the legal liability for a tax, the true burden of paying that tax may be shifted to others. For instance, the legal liability for state sales taxes is clear; it rests with the retail firms which sell the taxed items. However, most experts have concluded that such taxes are actually passed forward to consumers in the form of higher prices, i.e., the true incidence of the tax rests with consumers of the final products. Thus tax incidence may vary from legal liability.

In many cases, however, it is impossible to determine who bears the ultimate burden of a tax. Since a business firm is not a person *per se*, business taxes must be passed on to the owners of the firm, the workers of the firm, or to the consumers of the product. In reality, all three types of tax shifting are probably present in most cases, although the relative importance of each may remain unknown. The bottom line is that business tax cost studies assess the *initial impact* of taxes without answering any of the knotty questions of incidence.[2]

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2 The most comprehensive study of the true burden of state and local taxes under a variety of incidence assumptions is probably that by Donald Phares (1980).

There are several other aspects of tax shifting separate from the notion of the ultimate bearer of the tax. Theoretically it is possible for a state to deliberately shift the initial impacts of taxes within the state from businesses to individuals, or vice versa, without lowering total tax collections in the state. Thus a state might reduce business taxes in the hopes of spurring economic development. Another dimension of tax shifting is that a state may be able, in effect, to export part of its tax burdens out-of-state. Some experts maintain that significant tax exporting is occurring today in those states which are significant suppliers of natural resources through their utilization of the severance tax. Again, these types of tax shifting are not examined in business tax cost studies.

The second problem with business tax cost studies is that they usually fail to address any nontax costs. Since state and local tax costs tend to be a small part of total costs, this may amount to giving taxes relatively more importance or weight than truly deserved. In this regard it is interesting to note that, historically, surveys of business executives have not always rated costs of any kind, tax or nontax, as the most important variables in determining business location (Schmenner 1982; Foltman 1976). Although results may vary from study to study, business executives often cite the availability of labor, especially skilled labor, the productivity of labor, and proximity to markets as important location criteria. In fact, it is not unheard of for business executives to rate the level of individual taxes as more important than corporate taxes in business location decisions (Foltman 1976, p. 11).

The foregoing comments may be especially true in some of the emerging high technology industries where the emphasis is on innovation and research. These types of firms cite the quality of education, proximity to a major university, access to major transportation facilities, and other amenities or quality of life factors as particularly important to them (Malecki 1984). These comments are not meant to denigrate the merits of state and local business tax cost studies but rather to emphasize that these taxes may represent only one of the many concerns of business and they may not be the most important.

The third major weakness of business tax cost studies, and perhaps the most troublesome, is the implicit assumption in these studies that high taxes are

undesirable per se. The presumption appears to be that lower business taxes means more jobs. It is equivalent to assuming that taxes are a cost of doing business for which there is absolutely no benefit. Obviously, the development of infrastructure such as roads, communications, public health facilities, etc., provides the essential framework within which commerce and manufacturing can take place, while education helps to provide the workforce with employable skills and training.

Regional economic growth and development are complex phenomena that defy explanation by simplistic rules of thumb, no matter how appealing. These difficulties are illustrated clearly by comparing the employment growth rates of the Great Lakes states to the overall results of this study which will be discussed later. Minnesota unquestionably has the best economic performance in the region, yet the analysis of this study will show that it also has the highest state and local business tax costs in the region. On the other hand, the economic performance of Indiana and of Michigan appear to be identical and about average for the Great Lakes states, yet the analysis of this study will show that Michigan has much higher business tax costs than Indiana. Obviously, this does not mean that higher taxes in any of these states will engender more growth any more than lower taxes would do the same. It is meant to imply that there may not be any easy explanations of regional economic growth and decline.

The three limitations or problems of these types of studies notwithstanding, the assessment of business tax costs will likely remain an important subject of research in the years ahead. The Great Lakes states and Michigan in particular have been hard hit by the two most recent recessions. In such an environment, it should come as no surprise that policymakers in all of these states are concerned about business taxes and the relative burdens imposed across the states. Given the realities of interstate tax competition, no state wishes to be an outlier in the sense that it imposes significantly higher tax burdens on firms than neighboring states.

Review of Selected Studies

As mentioned previously, there has been no shortage of state and local business tax cost comparisons. That necessitates an extremely selective review

of studies here. We focus on recent and well-known studies that illustrate the primary approaches to the subject. First, business climate studies are assessed by looking at the most recent effort by Alexander Grant and Company, hereafter referred to as the Alexander Grant study. Second, two aggregate business tax cost studies are examined which focus solely on statewide estimates of state and local business tax costs, the on-going efforts of the Advisory Commission on Intergovernmental Relations (ACIR) and a study by William C. Wheaton of the Massachusetts Institute of Technology. Finally, two micro or firm-level studies are evaluated, specifically the most recent of the biennial studies by the Wisconsin Department of Revenue and a study by James Papke of Purdue University and Leslie Papke of the Massachusetts Institute of Technology.

Alexander Grant Study

Business climate studies are characterized by the construction of a general index using a variety of data, some quantitative and some qualitative. The single index attempts to summarize the attractiveness of a state for business. Various measures of state and local tax costs are usually major components of these composite indices. The fifth and most recent of the Alexander Grant studies evaluates the manufacturing business climate based upon 22 measurement factors. These factors are predominantly cost-oriented. The total or composite business climate score is obtained by standardizing the individual unrelated factors and applying a weighting scheme to the standardized scores.[3] The weights are determined from a survey of state manufacturing associations. According to the Alexander Grant study, this survey helps to ensure that the composite index reflects the views of the business community about what is important to their success.

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[3] There are no logical relationships between such disparate variables as population density, hours worked per week, vocational education enrollments, etc. Each factor is standardized by its mean value and standard deviation across all states to create indices for each variable. However elegant and comparable the indices may appear to be on the surface, that does not change the fact that the underlying data remain basically unrelated and noncomparable.

The rankings of the Great Lakes states in the Alexander Grant study are presented in Table I-2. According to the composite score, five of the six states in the region ranked near the bottom nationally. Indiana has consistently been ranked the highest in the Great Lakes region, meaning the best business climate, while Michigan has often received the worst ranking. In 1983, Michigan's composite ranking was the lowest possible. Michigan was also in last place in nongovernment controlled factors and 47th in government controlled factors.

There have been many reviews of the annual Alexander Grant studies. Critics tend to cite the variability in the rankings as evidence that the study is not really measuring the long-run attractiveness of states for business. Hunt (1982) finds problems with redundancy of the data, the ability of the data to actually measure the variables of interest and the arbitrary weighting scheme of the study which appears to change unpredictably from year to year. He also finds the approach biased against states with significant concentrations of industries that are high-wage-paying nationally, even though state average wage rates for those industries are not out of line with the national averages. Recent critiques (Mattila 1984 and Biermann 1984) have focused on the fact that the Alexander Grant rankings are at best only weakly correlated with measures of economic growth such as the employment growth rates discussed earlier in the introduction to this study. Sometimes the correlation even appears to be in the wrong direction.

Advisory Commission on Intergovernmental Relations Study

In contrast to business climate studies, the focus of aggregate tax studies is on the measurement of total state and local business tax costs and the relationship of those costs to total business activity, say sales, profits, or perhaps capital assets. The most recent study by the Advisory Commission on Intergovernmental Relations (ACIR) uses state tax data from 1977 to determine the business share of total state and local tax collections.

Selected results from the ACIR study are presented in Tables I-3 and I-4. The aggregate results by type of tax can be found in the first table, while the

business share of state and local tax costs is presented in the second table. We have added aggregate estimates for workers' compensation payments and unemployment compensation taxes to present a more complete picture of state and local business taxes. Workers' compensation is measured from the benefit side because there is no unambiguous statewide measure of the cost of this program.

The ACIR study is important because it provides an idea of the relative importance of the various taxes across the states. Real and personal property taxes constitute about a third of the state and local business tax burden, easily the most important tax in the U.S., the Great Lakes region, and within each of the individual states. Thereafter, it appears that each of four taxes usually make up 10 percent or more of total state and local business taxes--workers' compensation payments, unemployment insurance taxes, corporate income taxes, and the business portion of the sales tax. However, there is wide variation in the relative importance of these taxes from state to state.

It is interesting to note that the business share of total state and local taxes varies from a low of 28.6 percent in Wisconsin to a high of 40.3 percent in Ohio. As mentioned earlier, it is possible for a state to reduce the initial impacts of taxation on businesses without lowering total taxes in the state. This may be the situation in Wisconsin since that state has one of the most progressive state personal income taxes in the Great Lakes region as well as the highest total state and local taxes per capita in the region[4] (Advisory Commission on Intergovernmental Relations, January 1984, p. 42 and pp. 62-65).

It should be emphasized that calculating total business tax costs is not a straightforward task nor are the resulting estimates necessarily precise. The

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[4] There are, of course, other explanations possible for variations in the relative importance of business taxes across states. For instance, predominantly rural states will likely have relatively low business tax collections. But that does not explain Wisconsin's situation since manufacturing employment as a proportion of total employment in Wisconsin has been virtually identical to the Great Lakes average. For the underlying employment data on which this statement is based, see Bureau of Labor Statistics (December 1983).

problems are especially severe for the business portion of sales taxes and property taxes. These must be estimated in most cases because the state data do not distinguish between business and individual collections. The ACIR staff followed the research of Fryman (1969) in estimating sales taxes and made judgments about the scope of each state's sales tax. Real and personal property taxes were the result of a lengthy series of computations but generally were based on the composition of assets found in the Census of Governments (Bureau of the Census). ACIR does not attempt to relate their estimates to a measure of business sales, profits, or capital assets.

Wheaton Study

In a recent article, Wheaton has attempted to relate aggregate business taxes to two measures of gross business activity, namely business income and the capital assets of businesses. The business taxes included in the study were unemployment compensation, corporate income taxes, property taxes, and miscellaneous business fees and licenses. Like ACIR, the data were for 1977. Wheaton develops separate estimates for all businesses and the manufacturing sector. Suffice it to say that Wheaton encountered some of the same difficulties as ACIR. There is also no unequivocable measure of profits or business assets by state. Wheaton derived business income from state estimates of GNP, which themselves are gross and imperfect measures of output (Garnick 1980).

The empirical results from Wheaton's study for all businesses and the manufacturing sector for the Great Lakes states are presented in Table I-5. Michigan has by far the highest tax burden, whether measured in relation to business income or capital assets. The state's tax burden for all businesses relative to business income is almost double the rate of the next closest state, Minnesota. On the other hand, the lowest tax burdens are found in Ohio. The total variation across the Great Lakes states is surprisingly large, as much as 300 percent.

The ACIR and Wheaton studies are illustrative of many of the strengths and weaknesses of all statewide aggregate studies of business taxes since

ultimately these studies rely on the same set of data. First, in contrast to the unstructured approach of business climate studies, aggregate studies usually attempt to put business tax costs into some kind of a formal framework. ACIR focuses on business's share of total state and local taxes, while Wheaton relates business tax costs to measures of gross business activity. In our view this methodology is preferable to the subjective approach of business climate studies, although the purposes of these studies may differ as well.

Second, all aggregate state tax studies tend to be historical analyses, as witnessed by ACIR and Wheaton, who both used data from 1977. In part, that is a function of the fact that years in which a full census of business activity is done (every five years) provide more complete information about the business sector. However, it is also true that regional census data are compiled and released slowly, sometimes with delays of three to five years (Hunt and Hunt 1984, p. 47). Unfortunately, that lessens the value of these studies to state policymakers who must address changes in the current tax laws, not those that existed four to seven years ago.

Finally, it is important to note that aggregate tax studies do not always consider the same taxes. ACIR excludes workers' compensation and unemployment compensation. Wheaton excludes sales taxes because of the difficulty of measurement, but includes unemployment compensation. Comparisons across aggregate studies are complicated further because the relative measures of business activity against which tax costs are evaluated may differ as well.

Wisconsin Department of Revenue Study

The third general approach to comparing business tax costs across regions might be termed the micro or firm-level approach where tax liabilities are calculated for hypothetical firms. That approach permits the study of tax burdens for different types of firms and thereby allows consideration of some of the complexities that actually exist in the statutes that govern state and local taxation. One of these studies, that by the Wisconsin Department of

Revenue, has been done biennially for the past decade.[5] The second study, that by Papke and Papke, is a computerized tax simulation model of firm investment.

The most recent study by the Wisconsin Department of Revenue, published in 1983, measures and compares state and local tax burdens for six firms with varying financial characteristics across 16 states. The basic approach, similar to other studies of this type, is to construct hypothetical balance sheets for the firms and then to calculate the tax liabilities for those firms. The taxes examined in the study include the corporate income tax, property taxes, sales taxes, and franchise taxes.

A summary of the results from this study for the Great Lakes states is presented in Table I-6. What is somewhat surprising is that the rankings are so consistent across the hypothetical manufacturing firms. Wisconsin always has the lowest state and local tax burden, followed by Illinois, Minnesota, and Ohio. The only variability in the relative positions of the states occurs for last place which alternates between Indiana and Michigan. The variation in the tax burdens from the low tax state to the high tax state can be as high as 100 percent.

One of the problems with this study is that the balance sheets, income statements, and the analysis of the state tax structures are highly simplified to facilitate the tax computations. For instance, current investment is assumed to be 10 percent of total machinery and equipment assets for all firms in all industries. The sales tax is generally assumed to apply only to machinery and equipment purchases or some percentage thereof. There is also no consideration of property tax abatements or other special features of state taxes such as investment tax credits, individual state depreciation schedules for personal property, etc. It is possible that this simplified approach may

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5 The Wisconsin Department of Revenue did not publish a biennial study in 1981. They have published studies in 1973, 1975, 1977, 1979 and 1983.

contribute to the constancy of the rankings across the states and seriously bias the interstate comparisons.

Papke and Papke Study

The second micro or firm-level study of state and local taxes takes a much different approach from that of the Wisconsin Department of Revenue. Conceptually, Papke and Papke follow the user cost of capital model developed by Hall and Jorgenson (1967). They investigate the rate of return on an assumed investment for a hypothetical firm. In their approach, all locations are assumed to have the same gross rate of return initially. State and local taxes then decrease that rate of return over the economic life of the investment, assumed to be 60 years for structures and 15 years for machinery and equipment. The present value of the net income stream over the lifetime of the asset is the after-tax rate of return. The study encompasses 12 states and four taxes. The taxes included are corporate income, franchise, sales taxes on utility services, machinery and equipment, and property taxes.

The Papke and Papke model has several features. First, the locations are site-specific, 11 sites within Indiana and 1 site in each of the other states. Papke and Papke assert that this is an advantage since property taxes are local or site-specific, but it can also be misleading if the sites are atypical of that state. Second, Papke and Papke have allowed for the deductibility of state and local taxes from corporate income on federal tax returns. This is important since federal taxes offset almost half of any savings in state and local taxes. Third, Papke and Papke have attempted to calculate the change in tax burdens for firms involved in multistate operations. These firms apportion income according to a three-factor formula of sales, payroll, and property. Obviously, any given investment tends to change the tax burdens in all of the states in which the company operates, i.e., there are feedback effects which should be accounted for with multistate firms.

A number of general conclusions about state and local tax burdens in the Great Lakes states are possible from this study. However, the reader should be reminded once again that only 1 site in each of the states is examined, except

for the 11 sites in Indiana. All of the Great Lakes states are included in the study except Minnesota. From an all-industry perspective shown in Table I-7, Indiana is competitive with only one state in the Great Lakes region--Wisconsin. On the other hand, Michigan not only has lower tax burdens than any of the Indiana sites, but also it is one of the lowest tax cost states in many of the comparisons, sometimes competing favorably with Texas and Kentucky. It appears that Papke and Papke attribute this result, at least in part, to the favorable treatment of capital investment under the Michigan Single Business Tax, although it may be due to other factors as well.

The success of the Papke and Papke approach depends in part on the degree to which the computer model actually simulates the complex interrelationships between the state and local tax structures and the financial and operating characteristics of the hypothetical firms. Unfortunately the modeling is described in general terms only, so any critique is necessarily limited. However, some of the features which may not be accounted for in the study are: property tax abatements, Ohio's corporate income tax credit for property taxes paid on machinery and equipment, Wisconsin's corporate income tax credit for sales taxes paid on utility services, or some of the special features of Michigan's single business tax, as well as many other provisions of the state and local business tax structure.

There may also be some doubt that businesses actually plan investment in the complex way depicted in the Papke and Papke model and over such long time horizons, presumed to be the economic lifetime of the equipment--60 years for structures and 15 years for machinery. Nevertheless, we think this approach appears promising, and the capability of doing computer simulations offers research prospects which are not present otherwise.

Summary

It is apparent from this selective review that there is little agreement about state and local tax burdens. Among the studies reviewed, Michigan ranges from the lowest tax state in the region to the highest tax state. The same anomaly applies to Wisconsin. Some of the apparent contradictions are

undoubtedly due to differences among the studies in the years considered, the number of taxes included and method of measurement. Clearly, without agreement on the measurement of state and local tax costs, there can be no hope whatsoever of learning the relationship of taxes to regional economic growth and decline, business location, etc. One of the objectives of this study is to make a positive contribution toward measuring state and local tax costs.

Method of this Study

The focus of this study is on state and local business tax costs in Michigan relative to those in the neighboring Great Lakes states. It is anticipated that the end users of the study will be state policymakers, researchers, and citizens who wish to determine their state's competitive tax position. Therefore, the selection of method for this study is partly conditioned on these goals.

The business climate approach appears inappropriate for this study because it lacks a formal framework for analysis. The general index developed in business climate studies is based on a potpourri of factors, of which one or more of the business taxes may be a component. These broad measures may be valuable but the goal of this study is to determine both the magnitude and relative importance of state and local business taxes. There may also be some question about the ability of any single index to measure the total attractiveness or business climate of a state.

The aggregate state tax cost approach also appears inappropriate for this study. That method requires the utilization and manipulation of statewide data on tax collections and other variables. Aggregate studies provide important and valuable historical information, but they may fail to address current policy concerns. Since the economies of the Great Lakes states have been battered in the last few years and policymakers have responded to these events in part by changing various provisions of the tax codes, this aggregate historical approach may be particularly misleading today. It also prohibits the examination of the tax burdens for different types of firms, since aggregate state tax data cannot be estimated below the level of all businesses or all manufacturing.

The basic approach of this study is micro or firm-oriented. We do not follow Papke and Papke in estimating the after-tax rate of return on an assumed investment. Whereas the Papke and Papke approach amounts to estimating the change in taxes due as a result of an assumed investment, one of the important objectives of this study is the measurement of the absolute level or magnitude of the taxes. It remains essential for policymakers to know both the total and relative importance of the various taxes, especially since we seem to know so little about them now. It may also be important to understand some of the complexities and differences in the structural details of the taxes across the states and how they affect different types of firms.

The basic methodology utilized in this study is to construct the financial statements for eight hypothetical firms in different industries, varying in size and other relevant operating characteristics. This approach appears most meaningful to estimate the effect of state controlled or influenced costs because, by assuming that all nontax costs are identical, it isolates the effects of variation in state tax laws alone. In short, the study does not consider any regulatory costs, the plethora of business tax incentives except property tax abatements, or any other costs besides state and local taxes. This latter fact is especially significant because wage costs, energy costs, etc., may differ more than state and local taxes and be far more important as a proportion of total costs.

The analysis is conducted for the Great Lakes states for a number of reasons. First, there is a considerable amount of research which appears to show that actually very few firms move, but that when they do they tend to move only short distances. Second, it is well-known that the Great Lakes states are the industrial heartland of the United States, so frequently firms in the region find themselves competing most aggressively with other firms in the same region. Third, time and budget constraints did not permit an expansion of the study beyond the region, although that remains a possibility for future research.

The taxes evaluated in the study are workers' compensation, unemployment insurance, gross receipts, corporate income, franchise, value added, property

and sales taxes. The emphasis is on prospective tax costs rather than accounting or historical tax costs. We used the most current or near-term provisions of the state tax codes through about mid-1984 and scheduled to be effective at least by January 1, 1985. These matters are discussed further in the sections which evaluate the individual taxes. In total, these eight taxes constitute virtually all of the state and local tax burdens for the firms considered in this study.

Unlike most earlier studies, we have included both workers' compensation and unemployment insurance as business tax costs. That decision is not without its problems. These two payroll taxes do not support the general operation of state or local government.[6] It can also be argued that these payroll taxes should not be considered as taxes at all since society must bear the burden of these losses in some way. However correct these arguments may be, it also seems difficult to defend the notion that workers' compensation and unemployment insurance are not at least partly state controlled or influenced costs. Furthermore, it cannot be denied that the initial impact of these taxes falls on business firms. We think the estimation and inclusion of these taxes in the study will provide important data about the relative importance of payroll taxes compared to other business tax costs.

It should also be emphasized that, although the firms considered in this study are hypothetical, they are representative or prototypical of firms in their particular industries. The utilization of actual industry averages in constructing these firms insures that they are representative. Summary descriptions of the generic characteristics of the eight prototypical firms are presented in Table I-8. A more detailed synopsis that includes some of the financial data for each of the prototypical firms is presented in the pages following that table. These firms are all manufacturers except for the business services firm, which is most likely a supplier to a manufacturing

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[6] Workers' compensation is not a payroll tax but an insurance premium. In many states, workers' compensation insurance may be purchased from commercial carriers. For the sake of convenience, we treat workers' compensation as if it were a payroll tax in this discussion.

firm. Manufacturing firms were selected for this study because of their importance in the export base of a state.[7]

The primary source of data to construct the financial statements is the summary tax information available from the U.S. Internal Revenue Service (1983). The industrial disaggregation is available only at the two-digit SIC code level. The IRS summary data is supplemented by other data whenever necessary. For instance, capital investment and supplementary labor benefits are based on data from the U.S. Bureau of the Census (1982). Average annual employment is derived from estimated 1983 average annual wages. The estimated 1983 average annual wages are based on industry wages in the Great Lakes states in 1981 (U.S. Bureau of Labor Statistics, September 1982) adjusted for wage changes in the manufacturing sector in 1982 (U.S. Bureau of Labor Statistics, December 1983) and 1983 (U.S. Bureau of Economic Analysis, January 1984). The net result of these calculations is that wages in this study are estimates of average wages for the Great Lakes region by industry in 1983. Since wages are especially important in estimating workers' compensation and unemployment insurance taxes, it seemed preferable to approximate the Great Lakes averages rather than simply rely on U.S. averages.

The bulk of the empirical data for the prototypical firms is from 1980, since that is the most recent year for which complete data are available. It is important, however, for the data to be from a year which is not atypical, so that question is addressed in Table I-9. It shows the after-tax rates of return for the manufacturing sector and its two broad industry subgroupings, durables and nondurables. The after-tax rates of return in 1980 are slightly below the historical average for the nation, whether measured relative to sales or equity. Nevertheless, the later years of 1981 and 1982 do not appear to be

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[7] The export base of a state is generally considered to be those goods and services produced in the state which are shipped to national and international markets. To a large extent the success of the remainder of the regional economy, denoted as local industries, are thought to be dependent on the success of the export industries.

any closer to "normalcy" than 1980, nor does it appear logical to use empirical data from a year earlier than 1980 in a policy research study.

It is important to emphasize that this empirical data is used only in the form of ratios to develop the financial statements, e.g., 1980 industry investment to the value of shipments times firm sales to estimate firm investment, etc. So one of the assumptions in this study is that these proportions or ratios by industry have remained unchanged since 1980. Whether or not this assumption is literally true, it still provides a benchmark for the nontax costs which are assumed constant across the states in this study. When the absolute level of some variable becomes critical, such as wages, every attempt is made to estimate current values.

Before proceeding, it may be important to mention what is arbitrary and what is truly representative about the prototypical firms to prevent any misunderstandings about the study. Since a firm may face a virtually unlimited number of tax situations, the eight firms considered here are not meant to be representative of the entire population of firms. The specific size of the firms, the profitability of the firms, especially those with losses, and the unemployment experience of the firms have been selected to be characteristic of that industry's experience in 1980. In some cases the selected firms may help illustrate various features of the Michigan tax structure or changes in that structure as discussed later. Thus, some of the initial decisions about the characteristics of the firms are arbitrary. Thereafter, the detailed financial and operating characteristics of the firms are constructed using empirically-based industry averages.

The industry identification of these firms should not be over-emphasized in considering the results of this study. For instance, Prototypical Firm #3 is a large firm in the transportation equipment sector with $300 million of sales, large losses, and a much worse than average unemployment record. In large measure, the examination of this firm illustrates how the state and local tax system treats a large firm that is performing poorly rather than saying anything about the transportation equipment sector. In other words, any large firm with similar operating characteristics would pay the same taxes except for

workers' compensation, which is industry-specific. Conversely, if one were interested in a large firm in the transportation equipment sector with large profits, then the estimates for the two other large firms in this study, Prototypical Firms #1 and #2, may be more indicative of that situation, even though they are in other industries.

There are a number of unique features of this study that should be mentioned. First, this study considers virtually all of the state and local tax costs of the prototypical firms. According to Table I-3, which is a complete listing of state and local business taxes, the first five taxes -- workers' compensation, unemployment insurance, corporate income, property, and sales -- constitute 85.7 percent of total state and local business taxes in the Great Lakes region. The next three taxes, insurance, severance, and public utilities, are not relevant to this study because they are not assessed against manufacturing firms. Of the remaining two broad categories of taxes, occupation and business licenses and miscellaneous, which in total constitute less than 5 percent of tax costs, we have included the most important subcategory--franchise taxes. In sum, the taxes considered in this study probably account for 95 percent or more of the state and local tax costs of manufacturing firms.

The second unique feature of this study is the emphasis on identically situated firms. One should not hold state policymakers accountable for factors which they cannot influence, such as general wage levels. Also, the tax analysis of a firm should not be confounded by arbitrarily assigning the average level of performance of a state's economy to that firm. For example, a state may experience severe unemployment that significantly raises aggregate unemployment insurance costs, but some industries and firms within the state may be unaffected by these events. So the relevant question is not only the aggregate level of each state's unemployment insurance costs, but also the degree to which identically situated firms across the states share in paying for those costs. The answer is by no means obvious, since all states have adopted some form of experience rating <u>by firm</u> in determining unemployment insurance rates. In general, our approach is designed to isolate the

differences in tax costs that reflect only the differences in tax rates and tax structures.

The third unique feature of this study is related to the general method of the research. Within the time and budget constraints of the study, our goals were to use realistic data in constructing the prototypical firms and to avoid oversimplifying assumptions about the taxes. Among other activities, that included the completion of federal tax returns and state income tax returns for all of the prototypical firms and a review of the state administration of the taxes. This latter activity is important because the state statutes are subject to administrative rules and regulations as well as court litigation, all of which can significantly affect taxes due and payable.

The above discussion of the unique features of this study is not meant to deny that this study has no limitations. Like all tax cost studies, we omit the potentially significant benefits derived from government spending; nor do we examine the question of tax incidence. We ignore all nontax costs which not only may vary significantly across the Great Lakes states but also are much more important as a proportion of the firm's total costs of doing business. While it is best to assume that nontax costs are constant in order to isolate the influence of the state controlled or influenced variables, it has the potential to overemphasize the relative importance of state and local taxes in business location decisions. Obviously our exclusion of the benefits derived from government spending could also add to that possibility.

Another limitation of this study is that a large number of estimates and assumptions were necessary to operationalize the prototypical firm methodology. The large number of assumptions may raise significant questions about the meaning of the empirical results. There is a danger in taking the business tax cost estimates in this study too literally. We think the empirical results should be interpreted as approximations rather than precise estimates.

Each of the state and local tax costs are now examined individually. It should be emphasized that these sections present gross or full-value estimates

of those costs. Property tax abatements and federal tax offsets are not discussed until the total tax burdens are presented in Section VII. Except possibly for property taxes, the full-value estimates of the individual tax costs reflect the relative importance of these taxes across the states.

Table I-1

MEAN DIFFERENCES OF ANNUAL EMPLOYMENT GROWTH RATES IN THE GREAT LAKES REGION RELATIVE TO THE U.S. EMPLOYMENT GROWTH RATE

Region	1957-1982		1957-1969		1970-1982	
	Mean Difference (percent)	t-statistic[1]	Mean Difference (percent)	t-statistic[2]	Mean Difference (percent)	t-statistic[2]
Manufacturing						
Great Lakes	-0.8	-2.31	-0.2	-0.47	-1.3	-2.95
Illinois	-1.3	-4.45	-0.7	-1.97	-2.0	-4.57
Indiana	-0.5	-0.98	0.4	0.66	-1.3	-1.74
Michigan	-0.8	-0.92	0.1	0.09	-1.7	-1.40
Minnesota	1.3	3.77	1.7	3.81	0.9	1.78
Ohio	-1.2	-3.25	-0.7	-1.18	-1.6	-3.78
Wisconsin	-0.0	-0.05	-0.3	-0.19	0.2	0.38
Total Nonagricultural						
Great Lakes	-0.8	-4.00	-0.4	-1.55	-1.2	-4.29
Illinois	-1.1	-6.18	-0.7	-3.85	-1.5	-5.57
Indiana	-0.7	-1.95	0.0	0.14	-1.3	-2.48
Michigan	-0.9	-1.93	-0.2	-0.26	-1.6	-2.42
Minnesota	0.4	1.43	0.5	1.06	0.3	0.96
Ohio	-1.1	-4.95	-0.8	-2.22	-1.4	-5.39
Wisconsin	-0.2	-1.30	-0.0	-0.37	-0.3	-1.28

Sources: U.S. Department of Labor, Employment and Training Administration, Employment and Training Report of the President, various issues; Bureau of Labor Statistics, Employment and Earnings, May 1983.

1. A t-value greater than 2.056 in absolute terms indicates that the mean difference is significantly different from zero at the 5 percent level.

2. A t-value greater than 2.160 in absolute terms indicates that the mean difference is significantly different from zero at the 5 percent level.

Note: In terms of the business cycle, the end years of the various sample periods are peak to trough for 1957 to 1982, peak to peak for 1957 to 1969, and trough to trough for 1970 to 1982.

Table I-2

1983 ALEXANDER GRANT STUDY:
GENERAL MANUFACTURING BUSINESS CLIMATE
IN THE GREAT LAKES STATES

State	National Rank	Composite Score*
Illinois	44	29.3
Indiana	25	49.8
Michigan	48	11.8
Minnesota	43	29.4
Ohio	46	23.3
Wisconsin	42	32.1

SOURCE: 1983 General Manufacturing Business Climates, Alexander Grant & Company, 1984, p. 5.

*Twenty-two factors were included in the composite scores: energy costs, unionization, taxes, wages, workers' compensation insurance rates, manhours lost, expenditure growth versus revenue growth, change in taxes, value added, unemployment compensation benefits, maximum workers compensation benefits payment, change in wages, debt, unemployment compensation net worth, vocational education enrollment, high school educated adults, environment control, change in unionization, population change, welfare expenditure hours worked, and population density. Since the raw data were not directly comparable, the raw data were normalized using the standard deviation, weights were applied from a survey of state manufacturing associations, and the resultant combined scores were rescaled to base 100.

Table I-3

STATE AND LOCAL TAXES WITH AN INITIAL IMPACT ON BUSINESS, 1977, BY REGION*

(in millions)

Type of Tax	United States		Great Lakes		Illinois		Indiana		Michigan		Minnesota		Ohio		Wisconsin	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Workers' Compensation Payments	8,623	12.1	1,633	11.6	395	10.1	76	6.1	437	13.3	135	11.1	478	15.4	112	8.9
Unemployment Compensation Taxes	8,523	11.9	1,888	13.4	419	10.7	139	11.2	577	17.5	138	11.3	378	12.2	237	18.8
Corporate Net Income Taxes[1]	9,902	13.8	2,195	15.6	384	9.8	86	6.9	817	24.8	258	21.2	398	12.8	252	20.0
Real and Personal Property Tax on Business	22,175	31.0	4,763	33.9	1,410	36.1	475	38.1	1,052	31.9	297	24.4	1,102	35.4	427	33.9
Business Portion of General Sales and Gross Receipts	8,202	11.5	1,574	11.2	560	14.3	405	32.5	211	6.4	117	9.6	181	5.8	100	7.9
Insurance Taxes	2,354	3.3	387	2.8	79	2.0	44	3.5	82	2.5	47	3.9	101	3.2	34	2.7
Severance Taxes	2,168	3.0	74	0.5	-	-	-	-	10	0.3	60	4.9	4	0.1	-	-
Public Utilities Gross Receipts Taxes	4,101	5.7	892	6.4	503	12.9	0	-	33	1.0	84	6.9	214	6.9	58	4.6
Occupation and Business License Taxes[2]	2,222	3.1	318	2.3	52	1.3	19	1.5	34	1.0	25	2.1	171	5.5	17	1.4
Miscellaneous Business Taxes[3]	3,232	4.5	315	2.2	109	2.8	2	0.2	43	1.3	55	4.5	84	2.7	22	1.7
Total Taxes on Business	71,502	100.0	14,039	100.0	3,911	100.0	1,246	100.0	3,296	100.0	1,216	100.0	3,111	100.0	1,259	100.0

Sources: Workers' Compensation Payments from Social Security Bulletin, October 1980, p. 8. Unemployment Compensation Taxes from State Government Finances in 1977, U.S. Department of Commerce, Bureau of the Census, 1977, p. 27. All other taxes are from the revised appendix tables, Regional Growth: Interstate Tax Competition, Advisory Commission on Intergovernmental Relations, March 1981, pp. 63-71.

Note: Totals may not equal 100 percent due to rounding.

1. Includes Michigan's single business tax even though the tax base utilizes a modified value-added approach.
2. Includes alcohol license taxes, public utility license taxes, corporate license taxes in general, motor carriers license taxes, and occupation and business license taxes.
3. Includes amusement license taxes, document and stock transfer taxes, miscellaneous state business taxes, and the business portion of local other and unallocable taxes.

*Initial impact does not mean that business necessarily bears the ultimate burden of these taxes.

Table I-4

RELATIONSHIP OF STATE AND LOCAL TAXES WITH AN INITIAL IMPACT ON BUSINESS TO TOTAL STATE AND LOCAL TAXES, 1977, BY REGION*

(in millions)

Region	State and Local Taxes			Taxes on Business as a Percent of Total
	Business	Individuals	Total	
United States	71,502	121,464	192,966	37.1
Great Lakes	14,039	24,618	38,657	36.3
Illinois	3,911	6,577	10,488	37.3
Indiana	1,246	2,447	3,693	33.7
Michigan	3,296	5,735	9,031	36.5
Minnesota	1,216	2,119	3,335	36.5
Ohio	3,111	4,602	7,713	40.3
Wisconsin	1,259	3,138	4,397	28.6

Sources: State and local taxes on business from Table I-2. State and local taxes on individuals from the revised appendix tables, Regional Growth: Interstate Tax Competition, Advisory Commission on Intergovernmental Relations, March 1981, pp. 63-71.

*Initial impact does not mean that business necessarily bears the ultimate burden of these taxes.

Table I-5

WHEATON: SELECTED STATE TAX BURDENS ON ALL BUSINESSES AND MANUFACTURING, 1977

(percent)

	Taxes/ Business Income (All Businesses)	Taxes/ Business Income (Manufacturing)	Taxes/ Capital Stock (Manufacturing)
Illinois	6.2	9.3	2.9
Indiana	7.6	7.7	1.4
Michigan	12.8	20.3	3.9
Minnesota	8.0	10.2	3.5
Ohio	6.1	6.1	1.7
Wisconsin	8.3	7.6	3.1

Source: William C. Wheaton, "Interstate Differences in the Level of Business Taxation", National Tax Journal, March 1983, pp. 89 and 91; data for Indiana are from William C. Wheaton, "Interstate Differences in the Level of Business Taxation: A Correction", National Tax Journal, December 1983, p. 543.

Note: The state business taxes were defined as corporate income, property, business fees, and unemployment insurance.

Table I-6

1983 STUDY BY THE WISCONSIN DEPARTMENT OF REVENUE: TOTAL STATE AND LOCAL TAX LIABILITY FOR A HYPOTHETICAL FIRM IN SELECTED INDUSTRIES AS A PERCENT OF SALES

Corporation	1	2	3	4	5	6
Industry	Paper Products	Fabricated Metal Products	Machinery Manufacturing	Scientific Instrument Manufacturing	Food Manufacturing and Processing	Printer-Publisher
State						
Illinois	.97	.77	.59	.91	.46	.86
Indiana	1.57	1.20	1.20	1.44	.75	1.16
Michigan	1.60	1.16	1.18	1.44	.75	1.28
Minnesota	1.09	.90	.65	1.04	.50	.99
Ohio	1.32	1.14	.96	1.32	.60	1.12
Wisconsin	.83	.75	.49	.85	.39	.81

Source: Wisconsin Department of Revenue, Corporate Tax Climate: A Comparison of Sixteen States, February, 1983, p. 28.

Table I-7

PAPKE AND PAPKE: COMPARATIVE AFTER-TAX RATES OF RETURN ON NEW INVESTMENT WITH IDENTICAL HOME AND EXPANSION SITES

Location of Home and Expansion Site	All Industries Average	Rank[2]
Peoria, Illinois	13.028	4
Indiana[1]	12.797	7
Kalamazoo, Michigan	13.124	3
Wayne, Ohio	12.999	5
Dane, Wisconsin	12.397	12

Source: James A. Papke, editor, Indiana's Revenue Structure: Major Components and Issues, Part II, pp. 80 and 83.

1. Averaged over 10 Indiana sites whose average after-tax rates of return ranged from 12.712 to 12.940.

2. Twelve states were included in the study. Davies, Kentucky and Cameron, Texas out-ranked Kalamazoo, Michigan in this simulation with rates of return of 13.383 and 13.157 respectively.

Table I-8

SUMMARY DESCRIPTIONS OF THE PROTOTYPICAL FIRMS

Firm	SIC Code	Industry	Description
1	26	Paper	Large firm, average profits
2	28	Chemicals	Large firm, highly profitable, multistate operations, most capital intensive of the three large firms
3	37	Autos	Large firm, large losses
4	38	Instruments	Small firm, average profits but industry average profits low, highly labor intensive
5	35	Non-electrical Machinery	Small firm, large losses, capital intensive
6	73	Business Services	Small firm, small losses
7	36	Electronics	Medium firm, average profits
8	20	Food Processing	Medium firm with large seasonal workforce

PROTOTYPICAL FIRM #1

Item	Description
SIC Code	26
Industry	Paper and Allied Products
Sales	$300,000,000
Assets	$237,168,235
Investment	$21,543,927
Profit Rate Before Federal Taxes	6.10% of Sales
Wages & Salaries	$53,706,708
Average Annual Employment	2261
Average Annual Wages per Worker	$23,754
Total Supplementary Labor Benefits	$10,239,121
Firm Unemployment	Great Lakes Average

PROTOTYPICAL FIRM #2

Item	Description
SIC Code	28
Industry	Chemicals and Allied Products
Sales	$900,000,000 (4% in-state)
Assets	$759,319,055
Investment	$73,219,950
Profit Rate Before Federal Taxes	10.09% of Sales
Wages & Salaries	$132,068,262 (33.3% in-state)
Average Annual Employment	5418 (33.3% in-state)
Average Annual Wages per Worker	$24,376
Total Supplementary Labor Benefits	$23,173,155
Firm Unemployment	50% lower than Great Lakes Average

PROTOTYPICAL FIRM #3

Item	Description
SIC Code	37
Industry	Transportation Equipment
Sales	$300,000,000
Assets	$286,307,486
Investment	$12,887,700
Profit Rate Before Federal Taxes	-10.19% of Sales
Wages & Salaries	$68,712,546
Average Annual Employment	2505
Average Annual Wages per Worker	$27,430
Total Supplementary Labor Benefits	$16,675,185
Firm Unemployment	100% worse than Great Lakes Average

PROTOTYPICAL FIRM #4

Item	Description
SIC Code	38
Industry	Instruments and Related Products
Sales	$2,500,000
Assets	$1,140,190
Investment	$96,361
Profit Rate Before Federal Taxes	2.69% of Sales
Wages & Salaries	$1,150,000
Average Annual Employment	63
Average Annual Wages per Worker	$18,254
Total Supplementary Labor Benefits	$115,743
Firm Unemployment	Great Lakes Average

PROTOTYPICAL FIRM #5

Item	Description
SIC Code	35
Industry	Machinery, except Electrical
Sales	$3,000,000
Assets	$2,997,915
Investment	$131,705
Profit Rate Before Federal Taxes	-10.00% of Sales
Wages & Salaries	$796,400
Average Annual Employment	31
Average Annual Wages per Worker	$25,690
Total Supplementary Labor Benefits	$152,957
Firm Unemployment	Great Lakes Average

PROTOTYPICAL FIRM #6

Item	Description
SIC Code	73
Industry	Business Services
Sales	$2,500,000
Assets	$1,802,838
Investment	$139,446
Profit Rate Before Federal Taxes	-2.62% of Sales
Wages & Salaries	$974,334
Average Annual Employment	50
Average Annual Wages per Worker	$19,487
Total Supplementary Labor Benefits	$111,652
Firm Unemployment	Great Lakes Average

PROTOTYPICAL FIRM #7

Item	Description
SIC Code	36
Industry	Electric and Electronic Equipment
Sales	$20,000,000
Assets	$19,046,690
Investment	$958,415
Profit Rate Before Federal Taxes	5.22% of Sales
Wages & Salaries	$5,765,017
Average Annual Employment	269
Average Annual Wages per Worker	$21,431
Total Supplementary Labor Benefits	$1,093,172
Firm Unemployment	Great Lakes Average

PROTOTYPICAL FIRM #8

Item	Description
SIC Code	20
Industry	Food and Kindred Products
Sales	$30,000,000
Assets	$14,260,048
Investment	$686,161
Profit Rate Before Federal Taxes	3.76% of Sales
Permanent Wages & Salaries	$2,205,395
Average Annual Permanent Employment	100
Average Wages per Permanent Worker	$22,054
Seasonal Wages and Salaries	$879,907
Total Seasonal Employees	300
Average Wages per Seasonal Employee	$2933
Total Supplementary Labor Benefits	$850,707
Firm Unemployment	100% worse than Great Lakes Average

Table I-9

PROFITS AFTER TAXES AS A PERCENT OF SALES
AND STOCKHOLDERS' EQUITY, MANUFACTURING FIRMS,
1974-1982

Year	Profits After Taxes as a Percent of Stockholders Equity			Profits after Taxes As a Percent of Sales		
	All Manufacturing	Durables	Nondurables	All Manufacturing	Durables	Nondurables
1974	14.9	12.6	17.1	5.5	4.7	6.4
1975	11.6	10.3	12.9	4.6	4.1	5.1
1976	13.9	13.7	14.2	5.4	5.2	5.5
1977	14.2	14.5	13.8	5.3	5.3	5.3
1978	15.0	16.0	14.2	5.4	5.5	5.3
1979	16.4	15.4	17.4	5.7	5.2	6.1
1980	13.9	11.2	16.3	4.8	4.0	5.6
1981	13.6	11.9	15.2	4.7	4.2	5.1
1982	9.2	6.1	11.9	3.5	2.4	4.4

Source: 1974-1982, Economic Report of the President, February 1984, p. 319. 1983.

II. WORKERS' COMPENSATION*

Introduction

Workers' compensation (WC) programs protect workers who are injured on the job. The benefits include medical treatment, income maintenance payments, and rehabilitation, among others. The statutory provisions of state law which govern the WC program are state-specific without any coordination from the federal government. So the administration and benefits provided vary significantly across the states.

The cost of WC to employers is driven by the accident experience of firms, the benefits payable, and the administration of the program. Since there is no doubt that the states set the general parameters that help determine the costs of the insurance program, it can be regarded as a state-controlled cost of doing business. That is not to deny the fact that WC is not an ordinary tax in the sense of supporting the general obligations or budget of a state. Obviously it does not. It also does not deny the fact that low insurance benefits per se may not relieve society from its obligation to injured workers. The social costs of low benefit payments may show up as higher welfare costs, etc. Nevertheless, the cost of WC to an employer constitutes the initial impact of the state mandated insurance program much like the other business taxes. It is beyond the scope of this study to evaluate the total social costs, equity concerns, or any shifting of those costs.

There are generally three ways for an employer to meet the state mandated WC insurance requirement. First, the firm can purchase insurance protection from an approved commercial insurance carrier. The insurance carrier then bears the responsibility for all WC benefit payments. Second, the firm can purchase insurance protection from a state-organized insurance fund. This

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*The author is indebted to H. Allan Hunt of the W. E. Upjohn Institute for the analysis of this section. Without his help and generous support, the estimation of WC costs would have been impossible. The author, of course, accepts full responsibility for any errors or omissions.

state fund may compete with private insurance carriers or it may be designated an exclusive state fund. In the latter case, the exclusive state fund becomes the sole source of coverage, in which case private insurance is prohibited. The third way in which a firm can meet its WC obligations is to self-insure. As specified by the state statutes, certain employers are permitted to pay benefits as incurred rather than transferring the liability to an insurance carrier. These are generally large financially stable firms or sometimes associations of firms.

The WC programs are very different among the Great Lakes states. Ohio's WC insurance is provided by an exclusive state fund that does not permit self-insurance nor does it allow competition from private insurance companies. The other states permit private insurance but differ significantly in the manner of controlling that competition. The traditional approach, typified by Indiana and Wisconsin, is that the private insurance carriers in the state voluntarily participate in a price-setting organization that collects loss data, provides actuarial support, etc. At the national level this organization is the National Council on Compensation Insurance (NCCI). The insurance carriers through either the NCCI or a state association jointly utilize this information to set basic manual premiums and to change those premiums as necessary based on any new actuarial experience. The state generally regulates these premiums and approves a level it finds appropriate. Hunt (October 1984, p. 9) refers to this traditional approach as the cartel pricing system because it amounts to a price-administered or controlled market for WC insurance.

WC insurance was deregulated in 1983 by Michigan and Illinois, and in 1984 by Minnesota. This new system is termed open competitive rating to differentiate it from the traditional cartel pricing system. Obviously there are questions about the validity of comparisons between WC systems that are in transition compared to those that remain price-administered to some degree. There is also a serious question about the ability to compare either of these systems to the exclusive state fund in Ohio.

The adoption of open competition in Michigan embraced other significant changes in the statutes designed to lower costs. It may take a few more years

of experience with the new regime, however, to learn to what degree the new statutory provisions are truly cost-saving. It could even be longer before we have the definitive court interpretation of those statutory provisions.

In Michigan, about 40 percent of WC benefits are accounted for by self-insurance, the highest figure in the Great Lakes region. However, there is no adequate data base to assess the experience of self-insurers in this state or any other state. Self-insurers are disproportionately large firms and it is logical to presume that these firms self-insure to reduce WC costs. But it remains unknown how much their costs differ from other firms who have purchased insurance from commercial carriers.

It is possible, however, that open competition has narrowed the gap between the self-insured firms and those that purchase commercial insurance. According to a report in Hunt (October 1984, p. 20), the number of firms in Michigan returning to private insurance has exceeded the applications for self-insurance status by more than a two-to-one margin since the adoption of open competition in 1983. In any event, this study makes no attempt whatsoever to estimate the cost of WC for employers who self-insure. That topic represents an important one for future research if a way can be found to establish a data base for self-insuring firms.

Estimating WC Costs for the Prototypical Firms

As indicated in the introduction, the overall cost of the WC program is determined by the accident experience of the firms, the benefits payable, and the administration of the program. But the cost of WC coverage for an employer is determined primarily by the classification of risk into which his firm falls. That in turn is a function of the industry and the type of hazards to which the workers are exposed. The specific WC classification codes utilized in this study are reported in Table WC-1. Each two-digit SIC code of the prototypical firms is matched with a representative NCCI WC class. Since the WC classification codes are defined approximately at the four- or five-digit industry level, the matching is somewhat arbitrary. Given Ohio's unique WC classification system, the Ohio translation is listed separately.

The rates, or cost of WC insurance per $100 dollars of payroll, are presented in Table WC-2. These rates are those in effect in the first half of 1984 in the Great Lakes states. They are estimated pure premium rates where pure premium represents the actuarial expectation of total loss costs (benefits paid) relative to the wage base for the given insurance classification. It excludes the cost of selling, administering and otherwise maintaining the insurance mechanism.

In the open competition states, pure premium rates are the most directly comparable advisory rate information available today. Pure premiums systematically understate the actual cost of WC insurance to a business firm, but it appears to be the safest alternative to preserve the interstate comparisons of dissimilar WC systems using the prototypical firm methodology. It maximizes the comparability of the estimates across the states and measures the primary component of actual cost, namely benefits paid and/or incurred. It also represents that portion of WC costs most directly influenced by statute. Without special studies there is no way to estimate actual costs in the open competition states. The omission of other costs such as administration and marketing thus constitutes a limitation of the WC cost comparisons in this study.

Pure premiums are available directly in the open competition states of Illinois, Michigan, and Minnesota. In Ohio the "Base Rate" was chosen as most comparable to the pure premiums of the open competition states. This excludes the administrative cost assessment and the Disabled Workers Relief Fund assessment. In Indiana and Wisconsin, the two traditional NCCI states, the manual premiums were reduced by the most recent available statewide calendar year loss ratios to approximate pure premiums.

Most states follow the "single enterprise rule" in determining the insurance classifications assigned to a firm. This rule basically stipulates that a single industry-oriented classification code will be used for all of a firm's workers except for the standard exceptions of clerical and office workers, drivers, and draftsmen. Although Michigan has repealed the single enterprise rule, it remains the predominant practice in the state.

In this study, payroll is assigned to one of two WC classification codes for each firm, the industry-oriented classification code previously discussed or the standard exception classification of clerical and office workers. The average share of clerical and office workers in total payroll was obtained for 1980 from data in the U.S. Bureau of the Census (1982). Thus the total pure premium due and payable for each of the prototypical firms is calculated by applying the rates from Table WC-2 to the respective wage bases and summing to arrive at total estimated WC costs. The results in absolute dollar terms are presented in Table WC-3. These results indexed to Michigan are shown in Table WC-4, and as a percent of firm sales in Table WC-5.

Conclusions

In general WC costs appear to be much higher in Michigan, Minnesota and Ohio, somewhat lower in Illinois, and substantially lower in Indiana and Wisconsin. In fact, WC costs appear to be dramatically lower in Indiana. It is not unusual for WC costs in that state to be one-half of those in the next highest state. These differences tend to be persistent and substantial across the WC classes. WC costs in the highest cost state are as much as 500 percent above those of the lowest cost state in the region. In a few cases, WC costs can be as high as 1 percent of firm sales revenue, although the average appears closer to one-half of 1 percent of sales.

Michigan does not always have the highest WC costs in the region, although Michigan's costs are well above the regional average. For four of the eight hypothetical firms Minnesota has higher costs, and for three of them, Ohio has higher costs. However, the dominant characteristic of these estimates is the wide extremes in WC costs across the Great Lakes states rather than a clustering about a mean value. The relationship of Michigan's WC costs to the regional average will become clearer in Section VII, when we focus the analysis squarely on Michigan's situation. At this point, it is sufficient to note that our estimates indicate that Michigan is at least 30 percent higher than the regional average for WC costs in 1984.

The limitations of these findings should not be ignored. The data are derived from commercial insurance rates and may not reflect the costs of

self-insurers. These rates are also pure premium rates across very dissimilar WC systems. Although we think our measurements maximize comparability, some experts maintain that WC systems are basically noncomparable. In our view, state policymakers cannot afford the luxury of such a conclusion, but we readily admit the difficulty of making interstate comparisons of general WC costs using any methodology.

In general, the conclusions about WC costs in this study are confirmed by two other recent studies, one by John Burton and Alan Krueger (January 1984) and the other by Theodore St. Antoine (December 1984). Burton's results are compared to the unweighted state average of the WC rates utilized in this study in Table WC-6. The absolute estimates of each study are not directly comparable because different WC classes and different years are involved. But the index numbers using Michigan as the base clearly show that the relative results of the studies are similar. St. Antoine's report finds Michigan's WC costs to be about 30 percent above the Great Lakes average[1] but slightly below the national average. In some particularly pointed comments about the fairness of the WC system, however, St. Antoine suggests that Michigan not compare the cost of its WC program with that of Indiana because of the latter state's low benefit provisions.[2] According to him, "Indiana has simply opted out of twentieth century public policy in its slighting of the injured worker" (St. Antoine, December 1984, pp. 12-13).

In conclusion, WC insurance systems in the Great Lakes region are undergoing evolutionary changes with particular focus on reforms that reduce business costs. In the last two years alone it has been estimated that WC

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1 The St. Antoine report includes New York and Pennsylvania as Great Lakes states, besides the six states investigated here. The methodology and WC classes differ as well.

2 For example, the maximum weekly benefit for total disability in Indiana is $156.00. That is below the poverty level for a family of four and about one-half of the maximum weekly benefit amount allowable in the next highest Great Lakes state, Wisconsin. Michigan's maximum weekly benefit for total disability is $334.00. See Analysis of Workers' Compensation Laws 1984, U.S. Chamber of Commerce, Washington, D.C., 1984.

costs have fallen an average of 30 percent or more for Michigan firms. However, it appears that the state of Michigan still remains significantly above average in terms of WC costs for the region. It is very difficult to assess the total effect of the current legislation, and it will be a few more years before the total impact of the new laws is known, since they are subject to litigation and court interpretation. Still, the trends are encouraging for Michigan and the number of claims has fallen dramatically. So policymakers may wish to move very cautiously and carefully in evaluating new reforms.

Table WC-1

REPRESENTATIVE WORKERS' COMPENSATION CLASSES
FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	WC Code*	Description of WC Code
1	26	4239 (4233)	Paper and Paperboard Manufacturing
2	28	4459 (4432)	Plastics Manufacturing
3	37	3808 (3808)	Auto Manufacturing or Assembly
4	38	3685 (3685)	Instrument Manufacturing, n.e.c.
5	35	3612 (3612)	Hydraulic Pump and Engine Manufacturing
6	73	8803 (8747)	Accountant or Auditor
7	36	3681 (3644)	Radio, Telephone, and Telegraph Apparatus
8	20	2111 (2111)	Cannery, n.e.c.

*Codes in parentheses represent Ohio equivalents.

Table WC-2

WORKERS' COMPENSATION PURE PREMIUM RATES
FOR THE PROTOTYPICAL FIRMS, JANUARY-JUNE 1984
(Per $100 of Payroll)

Firm	SIC Code	WC Code[1]	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	4239 (4233)	4.34	0.95	5.11	4.76	6.48	1.66
2	28	4459 (4432)	3.19	0.77	3.91	4.87	2.98	1.52
3	37	3808 (3808)	3.17	0.82	4.71	5.72	6.29	2.03
4	38	3685 (3685)	1.06	0.23	1.71	1.36	0.95	1.43
5	35	3612 (3612)	1.61	0.16	2.46	3.63	2.44	1.38
6	73	8803 (8747)	0.17	0.06	0.27	0.39	0.37	0.13
7	36	3681 (3644)	1.44	0.34	3.24	2.16	1.29	0.75
8	20	2111 (2111)	3.13	1.38	4.86	4.12	2.14	1.86
		8810[2]	0.13	0.06	0.26	0.21	0.17	0.10

SOURCE: Based on data from the workers' compensation bureaus of the individual states.

1. WC codes in parentheses are the Ohio equivalents.

2. WC Code 8810 is that for clerical workers.

Table WC-3

ESTIMATED WORKERS' COMPENSATION COSTS FOR THE PROTOTYPICAL FIRMS

(in dollars)

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	2,105,239	462,515	2,484,480	2,312,585	3,142,015	807,924
2	28	1,095,302	267,274	1,352,683	1,673,303	1,028,101	525,743
3	37	1,991,050	516,659	2,962,426	3,591,171	3,945,282	1,276,057
4	38	9,527	2,158	15,513	12,347	8,691	12,636
5	35	8,341	971	12,930	18,554	12,559	7,115
6	73	1,528	585	2,599	3,221	2,962	1,170
7	36	73,619	17,592	165,410	110,536	66,334	38,575
8	20	85,690	37,790	133,263	112,934	58,881	51,004

Table WC-4

ESTIMATED WORKERS' COMPENSATION COSTS RELATIVE TO MICHIGAN
FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	85	19	100	93	126	33
2	28	81	20	100	124	76	39
3	37	67	17	100	121	133	43
4	38	61	14	100	80	56	81
5	35	65	8	100	143	97	55
6	73	59	23	100	124	114	45
7	36	45	11	100	67	40	23
8	20	64	28	100	85	44	38

Table WC-5

ESTIMATED WORKERS' COMPENSATION COSTS AS A PERCENT OF SALES
FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	0.70	0.15	0.83	0.77	1.05	0.27
2	28	0.37	0.09	0.45	0.56	0.34	0.18
3	37	0.66	0.17	0.99	1.20	1.32	0.43
4	38	0.38	0.09	0.62	0.49	0.35	0.51
5	35	0.28	0.03	0.43	0.62	0.42	0.24
6	73	0.06	0.02	0.10	0.13	0.12	0.05
7	36	0.37	0.09	0.83	0.55	0.33	0.19
8	20	0.29	0.13	0.44	0.38	0.20	0.17

Table WC-6

COMPARISON OF STATEWIDE WORKERS' COMPENSATION RATES
OF THIS STUDY WITH THE RESULTS OF BURTON AND KRUEGER

State	Upjohn Institute		Burton and Krueger	
	Unweighted Average[1,3]	Indexed to Michigan	Weighted Average[2,3]	Indexed to Michigan
Illinois	1.93	69	1.075	69
Indiana	.53	19	.337	22
Michigan	2.81	100	1.561	100
Minnesota	2.83	101	1.411	90
Ohio	2.46	88	1.375	88
Wisconsin	1.12	40	.791	51

1. The unweighted average of this study is the simple arithmetic average of the WC pure premium rates shown in Table WC-2.

2. The weighted average is computed over 44 general WC classification codes for 1983. They are general in that these codes exist in all states. The weights are the NCCI payrolls in each of the 44 classifications. The complete Burton and Krueger methodology is complex. See John F. Burton, Jr. and Alan B. Krueger, "Interstate Variations in the Employers' Costs of Workers' Compensation, with Particular Reference to Connecticut, New Jersey, and New York," (mimeo), January 1984.

3. Per $100 of payroll.

III. UNEMPLOYMENT INSURANCE*

Introduction

The unemployment insurance (UI) system in this nation emerged during the Great Depression. It partially compensates the lost wages of covered workers when they find themselves involuntarily unemployed yet willing and able to work. Total benefit outlays fluctuate significantly over the course of the business cycle, rising rapidly during recessions and falling rapidly during recoveries. In order to maintain the solvency of the system, it is necessary for the government to ensure that adequate reserves are available to meet unexpected emergencies.

UI is provided through a federal-state system. Each state provides its own UI program specifying eligibility rules, benefit provisions, administration and financing. The federal law sets broad guidelines for the entire program and imposes various penalties on those states that do not meet specified federal criteria. Thus there is a much greater degree of homogeneity in the UI system than in the workers' compensation system discussed in the earlier section.

Although the federal laws provide overall standards for the state UI programs, there are many differences among the states. Selected state provisions in the Great Lakes region are presented in Table UI-1. Michigan has the highest minimum weekly benefit; it and Wisconsin are the only states in the region that do not require a waiting week before a claimant can start drawing benefits. But Michigan is not the most generous state in the Great Lakes region in terms of the maximum weekly benefit or number of weeks payable and it does have one of the most stringent minimum qualifying requirements for benefits--20 weeks of work at $100 per week.

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*The author is indebted to Saul J. Blaustein of the W. E. Upjohn Institute for the analysis of this section. Saul's technical paper which fully documents the tax cost calculations of this section is available from the Institute for the cost of reproduction. The author, of course, assumes full responsibility for any errors or omissions.

Like workers' compensation, it is beyond the scope of this research to evaluate the UI program's adequacy, equity or what perhaps might be termed the moral obligations of society to the unemployed. It should be noted, however, that the benefits provided obviously affect the costs of the program to employers, and these provisions do indeed vary across the states.

Employers are liable for both federal and state UI taxes. The federal government assumes full responsibility for all of the program's administrative expenses and partial responsibility for financing long term UI benefits, by far the smallest proportion of all the benefits paid by the system. In order to cover these benefit administrative costs, there is a minimum federal UI tax rate of .8 percent that applies uniformly to the taxable payrolls of all covered employers in the nation.[1] This rate is actually applied to the first $7,000 of each employee's wages in a year, sometimes referred to as the taxable wage base.

The federal government also maintains the state trust funds and a federal loan fund from which states may borrow so they can meet the benefit obligations of the program if their own reserves run out. If these loans are not repaid by the borrowing state within a specified period of time, penalties in the form of higher federal UI tax rates are assessed against employers in the state until the loans are repaid. Since March 1982, the federal government has also added interest charges on any new loans from the federal loan fund. As will be seen shortly, these provisions are important to the Great Lakes region because five of the six Great Lakes states had loans outstanding from the federal loan fund in 1984.

The individual states assume the bulk of the responsibility for benefit payments under the UI system. In general, the state UI tax rate applied to

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[1] The federal UI tax rate for 1984 nominally was 3.5 percent. But credits were granted to employers in states that met federal UI requirements, a maximum of 2.7 percent. For those unfamiliar with the UI system, it is easier to refer to the net federal UI rates than refer to nominal rates and the various offsets to those rates.

employer payrolls usually consists of a uniform element, an experience based element, and sometimes other special surcharges. As with the federal tax, there are also state taxable wage base limits. The specific state wage base limits may differ from the federal counterpart, as well as from each other, so they also contribute to variations in UI tax costs across states.

Since economic conditions in the Great Lakes states have led five of the six states to become indebted to the federal loan fund, it should come as no surprise that the state UI tax rates and wage bases have risen significantly in recent years. The sixth state, Indiana, borrowed funds in 1983 but repaid them in the same year when it levied a 20 percent special surcharge on the taxes paid by its employers. In spite of the fact that some of the states have acted to restrict benefits, employers are facing higher UI tax bills today. This is significant because it indicates that estimates of the historical costs of the program may be particularly misleading as a guide to public policy. It lends some support to the prototypical firm methodology of this study.

The individual state UI tax structures, especially their experience rated elements, are complex and differ considerably across the states. In general, the UI rate assigned an employer depends on the firm's unemployment experience or record over a period of three to five years or occasionally over the entire history of the firm, as well as the state's total fund experience. A positive balance employer is defined as one whose tax contributions have exceeded benefits charged over the specified period of time; the opposite is true for a negative balance employer who is usually subject to higher rates. The important point is that the state UI tax rate is firm-specific. That contrasts sharply with the WC system where rates tend to be industry-specific rather than firm-specific.

Since the emphasis in this study is on identically situated firms, it is necessary to capture the firm-specific element of state UI tax rates. That is done by using the average unemployment experience of the Great Lakes region, or some variant thereof, as a base to approximate the unemployment experience of each prototypical firm. Specifically, Firm #2 is assumed to have an unemployment experience that is 50 percent lower than the average for the Great

Lakes region and Firm #3, 100 percent higher than average. Firm #8 is also assumed to have a 100 percent higher than average unemployment rate but it has a large number of seasonal workers as well. All remaining prototypical firms are assumed to have an unemployment experience that is average for the Great Lakes region.

Conceptually, this approach implies that the unemployment experience of the firm is invariant to location. The firm's unemployment record might depend on the product market in which the firm operates, the ability of the firm to manage its human resources, or other factors. But it does not depend on the aggregate unemployment record of the state in which it is located. Thus an average firm in the Great Lakes region may find itself located in a state where the aggregate unemployment experience of that state is high, in which case the firm will likely be a positive balance employer. Or perhaps the same firm may find itself located in a state where the aggregate unemployment experience of that state has been very favorable, in which case it may find itself to be a negative balance employer. The identically situated firms of this study may find themselves in different relative positions vis-a-vis the aggregate state unemployment experience.

In summary, UI is provided through a federal-state system in which employers are liable for both federal and state UI taxes. The state UI tax rates vary, depending on the benefit provisions of the states, the total benefit obligations of the states, and the specific unemployment experience of the firm. Tax rates generally have been rising significantly in the last few years due to adverse economic conditions.

Estimating UI Costs for the Prototypical Firms

The UI taxable wage bases for the U.S. and the Great Lakes states in the three most recent years are presented in Table UI-2. In 1984, the state taxable wage bases in the Great Lakes region ranged from $7,000 to $9,800. Michigan finds itself about midway in this range with a taxable wage base of $8,500. As mentioned earlier, the federal taxable wage base is $7,000. The

meaning of the taxable wage base is that the federal and state UI tax rates are applied to wages paid to each individual employee only up to that limit.

It should be emphasized that the UI taxable wage bases effective in 1984 were used throughout this study to calculate the state UI taxes for the prototypical firms. Since the wage base limits have been raised in four of the six Great Lakes states in 1984, this study may show greater average UI tax liabilities than studies using earlier historical data.

The federal UI tax rates, the average state UI tax rates, and the ranges of each of the state UI tax rates are all presented in Table UI-3. Each of these tax rates is discussed now in turn.

Since the uniform element of the federal UI tax rate is .8 percent, it is clear from the table that only Indiana is currently not a debtor state to the federal loan fund. For the other states, the federal rate varies depending on how long each state's debt has been outstanding and its efforts to restore solvency. The 1984 federal UI tax rates were expected to remain the same as the 1983 rates in all of the Great Lakes states except Wisconsin. Wisconsin was to reach the specified time limit for debt repayment in 1984 so as to trigger an increase in the federal UI tax rate. Thus, Wisconsin's federal UI tax rate was adjusted accordingly.[2]

The state average UI tax rates for 1984 presented in Table UI-3 are preliminary estimates provided by the research staffs of the state employment security agencies to the U.S. Department of Labor. All estimates indicate a substantial increase over 1983 average rates. Obviously these estimates may be

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2 The tax cost calculations of this study were based on estimated federal UI tax rates through about mid-1984. In late 1984, Wisconsin avoided the federal penalty tax by paying the equivalent amount out of its trust fund. So there is a .3 percent error in the federal UI tax rate utilized in this study for that state. However, there have also been minor changes in the federal UI tax rates in other states as well. None of these changes materially affect the conclusions or comparisons of this study.

in error if actual economic conditions affected the levels and mix of payrolls subject to the tax in 1984. These statewide average UI tax rates cannot be used directly to calculate the UI taxes due and payable for the prototypical firms because the statewide averages reflect the aggregate unemployment experience of all firms in the state besides the state-specific characteristics of the UI program. For this reason we assume specific unemployment records for the prototypical firms to isolate the state-controlled or influenced costs.

Finally, the ranges in the state UI tax rates presented in Table UI-3 clearly show the variation among the state UI programs. The low end of the range constitutes the uniform or minimum element of the state UI tax rate, while the remainder constitutes the experience rated element. What is clear from the table is that Michigan has the widest range and probably the most steeply experienced rated state UI system among the Great Lakes states. The degree of experience rating is important to employers because it indicates the extent to which the unemployment benefit costs are shared among all firms in a state as opposed to their concentration among those employers with bad unemployment records. Michigan is strongly oriented toward having those firms who contributed the most to the high-cost problem pay the highest rates.

Actually, the range of the Michigan UI rates in the table understates the experience rating of employers in the state and warrants a fuller explanation. In 1982 Michigan adopted numerous reforms of the state UI law designed to curb the increase in costs, raise revenue, and to move toward a more experience rated tax. Negative account employers in Michigan must, in addition to the UI tax, pay a 1 percent "solvency" tax to cover the interest liability on the outstanding loans from the federal loan fund. The positive balance employers are not subject to this tax at all. Furthermore, positive balance employers in Michigan are given a partial credit against their state UI taxes for the increase in the federal UI tax above the uniform component as provided by the loan repayment provisions. The credit allowed is one-half of the additional federal tax paid in the prior year. New employers in the state are given a 100 percent credit on their Single Business Tax liability for the amount of the added federal unemployment tax imposed to help repay Michigan's loans. The philosophy of the Michigan legislature apparently is that these new firms did

not create Michigan's federal UI debt, so they should not have to help repay it.

Several other features of the 1982 reforms of the Michigan UI program merit discussion. First, the 1982 reforms gradually phase out the limiter in the Michigan UI tax structure. The limiter had prevented tax rates from rising above 5.0 percent by more than .5 percentage points in any given year. It will be totally eliminated by the end of 1985. Thus, in the future employers will see faster rising rates should they develop a bad unemployment record. Second, the state is increasing the taxable wage base in stages to $8,500 in 1984, $9,000 in 1985, and $9,500 in 1986. This is important because a given range of tax rates designed to achieve experience rating objectives is effectively limited by a low taxable base.[3]

Finally, it should be mentioned that the reforms appear to be having the intended effects. Tax collections were up 40 percent in 1983 and also rose sharply in 1984. At the same time, benefits payable have fallen rapidly, primarily due to the economic recovery. The good news is that the Michigan Employment Security Commission is projecting a $700 million surplus for 1984 UI operations. So the state will be able to begin paying back the federal loans. None of the other debtor states in the Great Lakes region has taken action as aggressive as Michigan to solve its UI debt problem.

The primary problem in estimating the state UI tax rates directly applicable to the prototypical firms is the experience based component of the tax. The estimating procedure made use of the average state UI tax rates, the state and Great Lakes regional insured unemployment rates averaged over the 1979-83 period, and the given characterization of each firm's unemployment experience. Although the details are not fully presented here, the key relationship is that between the firm's assumed unemployment rate and the average rate for the state.

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[3] For further discussion of this point, see Hunt and Blaustein (1984).

The firm's assumed rate is taken as equal to the Great Lakes average insured unemployment rate (or twice the average for Firms #3 and #8 and half the average for Firm #2). Each firm's rate is then expressed as a ratio to the average insured unemployment rate for each state. This ratio times the experience rated component of the 1984 estimated average UI tax rate for the state yields the estimate for this component for the firm in that state, subject to the state's minimum and maximum rates. It is a descriptor of the firm's unemployment experience relative to the state average and allows the estimation of the experience rated portion of the tax. Any applicable uniform components are then added to this estimate of the firm's experience rated component to obtain its total estimated state UI tax rate. Further details are provided in the technical documentation to this section which is available from the Institute.

The average annual employment and the average annual payroll of the prototypical firms do not provide a satisfactory method to calculate UI taxable payrolls. The primary reason is that employees may be placed on temporary layoff, may leave the firm, and new ones may be hired resulting in part-year employment with one firm. Thus there are questions both about the degree of labor turnover and the payroll involved. This latter question arises because of the various taxable wage bases which limit the payroll against which UI taxes are assessed. In all cases, a firm's UI taxable payroll is less than its total payroll but the former is not observable directly.

In this study the UI taxable payrolls at the various UI taxable wage bases applicable in the individual states must be estimated for the prototypical firms. The estimates are presented in Table UI-4. First, based on turnover rates by industry the total number of <u>different</u> employees on the payroll can be approximated from the average annual employment of each of the prototypical firms. Second, the same turnover data can serve to differentiate part-year employees from year-round employees. The turnover rate data are U.S. averages by industry for 1981, the latest available since the series was discontinued thereafter (U.S. Bureau of Labor Statistics, March 1982). Finally, the U.S. census distribution for wage and salary income of persons is used to account for the likely proportion of part-year employees who earned less than the

overall average wage for the firm. It was also assumed that there were no part-time employees in the prototypical firms except for the seasonal workers of Firm #8 and that all year-round employees earned no less than the taxable wage base. Further details about the estimation of the taxable payrolls are contained in the technical documentation to this study.

The information on the tax rates and the taxable payrolls can be combined to estimate the UI tax costs of the prototypical firms. The total UI tax costs, including the federal UI tax, are presented in Table UI-5, indexed to Michigan in Table UI-6, and presented as a percent of sales in Table UI-7.

Results and Conclusions

The estimated UI tax costs are much lower in Indiana than the other Great Lakes states. Of the remaining states, the overall variation in costs does not exceed 20 percent from the low to high state in all but a few instances. Thus firms with a given unemployment record do not appear to pay dramatically different UI tax costs in the five states of Illinois, Michigan, Minnesota, Ohio and Wisconsin. For the prototypical firms, UI tax costs can be as high as 1 percent or more of sales but they are usually much less than that, closer to one-half of 1 percent of sales.

The effects of the different experience rating approaches can be seen clearly in the estimates. Michigan's UI tax costs are near the highest in the region for Firms #3 and #8, the two firms with a 100 percent worse than average unemployment record. On the other hand, for the firms with average unemployment records, Michigan tends to be the lowest cost state in the region outside Indiana. In general the net effect is that Michigan appears to have much higher UI tax costs for firms that have a much worse than average unemployment record and lower than average tax costs for those firms with average or better unemployment records.

In sharp contrast to Michigan, Ohio's UI taxes appear to be only mildly experience rated. That means the employers in Ohio share the costs of the UI program more uniformly, regardless of the particular firm's unemployment

record. The prototypical firms where the unemployment record is given as average or half the average for the Great Lakes region pay the highest UI tax bills in Ohio. Curiously enough, however, apart from Indiana, Ohio and Illinois are the lowest in costs for Firms #3 and #8, the firms with a 100 percent worse than average unemployment record. These results are undoubtedly due to the rather restrictive upper limits on the experience rated components of the UI tax rates in these states and a lower tax base.

It is beyond the scope of this study to evaluate the fairness or economic rationale of the various UI experience rating applications in use. But it should be mentioned that Ohio's approach is more like the other Great Lakes states than Michigan's. In fact, Michigan's UI taxes are among the most steeply experience rated in the nation.

From an economic development perspective, Michigan's UI program, as reformed by the 1982 legislation, may have some salutary effects. First, it is possible that employers will be more motivated to avoid layoffs because of the alternative prospect of incurring sharply higher UI costs. Second, the fact that new firms are totally absolved and positive balance employers are partially absolved from helping to pay back the federal UI debt through federal UI tax increases should help the recruiting and retention of firms. Finally, economic developers should not lose sight of the potential for the 1982 UI reforms to help eliminate the image that Michigan is anti-business. By restricting benefits and stiffening eligibility requirements, the reforms were designed to reduce costs. The approach adopted for UI taxes in Michigan is that those firms which "cause" the problem pay for the problem to a far greater extent than before.

It is also extremely important for economic developers in Michigan not to use the statewide average UI tax rates in cost comparisons. Average rates are high in Michigan due to the overall bad experience of the state. But it appears that individual firms in the state with unemployment records that are average for the region fare much better on their UI tax costs.

All of the firms in this study are on-going permament firms eligible for UI experience rating. New employers, however, are assigned state-mandated UI

rates for a year or so since they do not yet have an unemployment record. Once such a record is established, the experience rated portion of the state UI tax applies. New firms are also liable for the federal UI tax, including any penalties, although Michigan allows a 100 percent credit for the federal penalty tax paid by new firms as a part of the Michigan Single Business Tax.

None of the firms in this study were assumed to be new firms because it did not seem useful to estimate tax burdens that in effect are temporary. Presumably, most firms plan to exist more than a couple of years and therefore base their decisions on a longer time horizon than that. Nonetheless it may be helpful to look at the effective UI tax rates for new firms. These are shown in Table UI-8. Michigan shares the lowest UI tax rate for new firms with one other state in the region, Indiana. Again, this is just another dimension of Michigan's reliance on experience rating.

We also have several concerns about Michigan's steeply experienced rated UI tax. If the approach were taken to extremes, it would undermine the insurance principle of the state UI system. It could add to the financial woes of firms already in severe difficulty. The elimination of the limiter entirely by the end of 1985 will also mean that firms will be much more vulnerable to a sudden swing in tax rates. This may be particularly true for small firms where the layoff of one or two workers constitutes a dramatic change in the firm's UI experience. It would not be surprising that, when small or large firms first experience such a dramatic swing in rates, it will lead to considerable lobbying of state policymakers on their behalf.

Regardless of the finding in this study that Michigan employers with average unemployment records do not pay higher UI rates than elsewhere in the Great Lakes region, employers' perception of UI tax costs may be particularly negative currently because both the UI taxable wage bases and the federal-state UI tax rates have been increasing significantly in recent years. Thus many employers in the Great Lakes states, including those in Michigan, have been paying higher UI taxes in 1984. Unfortunately these adverse trends may continue for a few more years since UI tax rates tend to lag the actual unemployment experience of a state or firm.

On the other hand, Michigan's aggressive action to solve its UI debt problem allowed the state to reduce its debt significantly in 1984. By May 1985, Michigan should pay off all of its interest bearing debt. That will help to keep the interest surcharge down and eliminate it entirely soon. If current economic trends continue, Michigan could eliminate all of its UI debt sometime early in 1987. Michigan's debt liquidation will likely occur sooner than seems likely for Illinois, Ohio, and Wisconsin.

The estimated UI tax costs should be viewed with caution. Many assumptions were necessary in estimating taxable payrolls and the UI tax rates. The specific numerical estimates may be in error, yet the trends across the Great Lakes states are probably indicative of UI tax costs in the region.

It should be emphasized that the estimation of both the experience based element of the state UI tax rates and the taxable payrolls are not trivial exercises. There does not appear to be any other way to approximate the firm's experience by using aggregate data and still preserve the validity of the interstate comparisons. In the case of taxable wages, it may be possible to rely on the annual average data for employment but that would seriously underestimate the UI taxes paid by these firms by roughly 25 percent. In this study we attempted to estimate the magnitudes of the UI tax costs as well as to determine the relative importance of the taxes across the states.

Table UI-1

COMPARISON OF SELECTED STATE UI BENEFIT PROVISIONS, 1984

State	Minimum Earnings or Weeks of Work In Last Year to Qualify	Weekly Benefit Amount		Waiting Week Before Receiving Benefits	Regular Weeks Payable	
		Minimum	Maximum		Minimum	Maximum
Illinois	$1,600 in at least 2 quarters	$50.00	$209.00[2]	Yes	26	26
Indiana	$1,500[1] in at least 2 quarters	$40.00	$141.00[2]	Yes	9+	26
Michigan	$100 per week, 20 weeks	$54.00	$197.00	No	15	26
Minnesota	$114 per week, 15 weeks	$52.00	$191.00	Yes[3]	11	26
Ohio	$85 per week, 20 weeks	$10.00	$233.00[2]	Yes	20	26
Wisconsin	30 percent of state average, weekly wages per week, 18 weeks	$37.00	$196.00	No	14+	26

Source: Letter, Von D. Logan, Director, Bureau of Research and Statistics, Michigan Employment Security Commission, dated September 5, 1984.

1. Total earnings must be at least 1¼ times earnings in high quarter

2. For claimants with dependents.

3. Compensated if claimant fully re-employed after 4 weeks of benefits are paid.

Table UI-2

UI TAXABLE WAGE BASES IN
THE UNITED STATES AND THE GREAT LAKES STATES
1982-84

Region	Taxable Wage Base		
	1982	1983	1984
United States	$6,000	$7,000	$7,000
Illinois	7,000	8,000	8,000
Indiana	6,000	7,000	7,000
Michigan	6,000	8,000	8,500
Minnesota	8,300	9,000	9,800
Ohio	6,000	7,000	8,000
Wisconsin	6,000	8,000	9,500

Table UI-3

FEDERAL UI TAX RATES AND ESTIMATED STATE UI TAX RATES EFFECTIVE FOR THE GREAT LAKES STATES IN 1984

State	Federal UI Tax Rate[1] (percent)	Estimated State Average UI Tax Rate[2,3] (percent)	Range of Total State UI Tax Rate (percent)
Illinois	1.5	4.5	.6 - 6.7
Indiana	.8	2.4	1.3 - 4.5
Michigan	1.4	5.5	1.0 - 10.0
Minnesota	1.4	2.8	1.0 - 7.5
Ohio	1.4	4.8	1.3 - 6.2
Wisconsin	1.1	4.7	.4 - 9.0

1. The 1984 federal UI tax rates were expected to remain the same as the 1983 rates in all of the Great Lakes states except Wisconsin. In Wisconsin the 1984 federal UI tax rate was expected to increase by .3 percent to reflect the rate increase imposed due to that state's borrowing from the federal loan fund.

2. Preliminary estimates provided by the research staffs of the state employment security agencies.

3. The estimated state average UI tax rates cannot be used to directly estimate the state portion of UI tax costs because the statewide averages reflect the aggregate unemployment experience of all firms in the state rather than the unemployment experience of a firm.

Table UI-4

ESTIMATED UI TAXABLE PAYROLLS OF THE PROTOTYPICAL FIRMS

Firm	SIC Code	Total taxable payrolls at a taxable wage base of				
		$7,000	$8,000	$8,500	$9,500	$9,800
1	26	$17,517,500	$19,184,000	$19,936,750	$21,294,250	$21,653,100
2	28	13,818,000	15,216,000	15,865,250	17,043,000	17,360,700
3	37	19,666,500	21,620,000	22,525,000	24,168,000	24,612,700
4	38	483,000	520,000	535,500	570,000	583,100
5	35	245,000	272,000	280,500	304,000	308,700
6	73	367,500	408,000	425,000	446,500	460,600
7	36	2,110,500	2,292,000	2,371,500	2,512,750	2,548,000
8	20	1,681,500	1,760,000	1,793,750	1,853,750	1,869,800

Table UI-5
ESTIMATED TOTAL UNEMPLOYMENT INSURANCE COSTS
FOR THE PROTOTYPICAL FIRMS
(in dollars)

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	1,145,219	665,661	1,058,657	1,249,877	1,281,174	1,204,164
2	28	587,670	317,814	586,910	605,560	726,012	569,552
3	37	1,743,530	1,042,321	2,189,949	2,267,107	1,723,864	2,427,698
4	38	31,180	18,362	28,624	33,830	34,856	32,399
5	35	16,187	9,310	14,874	17,753	18,118	17,135
6	73	24,288	13,969	22,492	26,522	27,184	25,257
7	36	137,097	80,203	126,311	147,774	153,322	142,577
8	20	143,135	89,116	176,003	174,848	141,454	188,109

Table UI-6

ESTIMATED TOTAL UNEMPLOYMENT INSURANCE COSTS RELATIVE TO MICHIGAN FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	108	63	100	118	121	114
2	28	100	54	100	103	124	97
3	37	80	48	100	104	79	111
4	38	109	64	100	118	122	113
5	35	109	63	100	119	122	115
6	73	108	62	100	118	121	112
7	36	109	63	100	117	121	113
8	20	81	51	100	99	80	107

Table UI-7

ESTIMATED TOTAL UNEMPLOYMENT INSURANCE TAX COSTS
AS A PERCENT OF SALES FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	0.38	0.22	0.35	0.42	0.43	0.40
2	28	0.20	0.11	0.20	0.20	0.24	0.19
3	37	0.58	0.35	0.73	0.76	0.57	0.81
4	38	1.25	0.73	1.14	1.35	1.39	1.30
5	35	0.54	0.31	0.50	0.59	0.60	0.57
6	73	0.97	0.56	0.90	1.06	1.09	1.01
7	36	0.69	0.40	0.63	0.74	0.77	0.71
8	20	0.48	0.30	0.59	0.58	0.47	0.63

Table UI-8

ESTIMATED UI TAX RATES
EFFECTIVE FOR THE GREAT LAKES STATES
IN 1984 FOR NEW MANUFACTURING FIRMS[1]

State	Federal	State
Illinois	1.5	4.0
Indiana	.8	2.7
Michigan	.8[2]	2.7
Minnesota	1.4	2.7[3]
Ohio	1.4	3.87[4]
Wisconsin	1.1	3.75[4]

1. Rates applicable to new employers assuming a full year of operations.

2. Includes credit for federal penalty tax granted on Michigan SBT.

3. If firm operated in 1983, add interest surcharge of 7.9 percent of 1984 UI tax.

4. Includes interest surcharge.

IV. GROSS RECEIPTS, CORPORATE INCOME, FRANCHISE, AND VALUE ADDED TAXES

Introduction

The individual state gross receipts, corporate income, franchise and value added taxes (GCFV) are evaluated in this section of the paper. Together with the property and sales taxes considered in subsequent sections, they constitute the nonpayroll levies examined in this study. In most cases, the nonpayroll taxes support the general obligations of state or local government.

States raise revenue and support their operations and commitments in the way the voters approve. So the number, type, and relative importance of the nonpayroll taxes vary significantly across the states. One state may choose to support education almost strictly through the local property tax, whereas another state may supplement the local property tax with sizable state spending on education. There may also be special credits on one tax that effectively act as a refund of a portion or all of other nonpayroll taxes previously paid. For instance, Wisconsin allows a credit on the corporate income tax for a large portion of the sales tax paid on electricity and natural gas usage, and Ohio allows a credit for a portion of the local property tax paid on machinery and equipment. Since states may easily substitute between the individual nonpayroll taxes and grant credits for taxes paid, analyses of the total business tax burden, or at least all nonpayroll taxes, may be more meaningful than comparisons of the individual taxes.

The statutory tax rates in the Great Lakes states for the various GCFV taxes are presented in Table GCFV-1. These statutory tax rates should be viewed with extreme caution because there are a myriad of exemptions and deductions that are taken before arriving at the actual tax base to which that rate is applied. Thus a firm may end up with wildly different tax liabilities across two states with corporate income taxes which nominally have the same statutory rate.

Corporate Income, Gross Receipts, and Franchise Taxes

The state corporate income tax is perhaps the most familiar of the GCFV taxes. It is a profits tax that follows the federal approach but each state's tax also has its own unique provisions. All of the Great Lakes states levy corporate income taxes except Michigan, which has substituted a modified value added tax in its place. Michigan's value added tax retains profits as a significant component of the tax base, however.

Gross receipts taxes are generally assessed against some measure of sales. Only one state in the Great Lakes region--Indiana--levies this tax. In that state it is actually an alternative tax: the firm pays the gross receipts tax in place of the corporate income tax only if the liability under the gross receipts tax is greater than the liability for the corporate income tax. Since the corporate income tax is basically a profits tax, the net effect of these provisions in the Indiana tax code is that the gross receipts tax is paid by firms with low profits and firms with losses.

Franchise taxes are usually assessed against some measure of the firm's net worth. Both Illinois and Ohio levy such a tax. In Ohio the tax is actually an alternative tax like the gross receipts tax in Indiana. Specifically, an Ohio firm must pay the franchise tax only if the total liability under that tax exceeds the liability for the corporate income tax. In such a situation the firm pays the franchise tax in lieu of the corporate income tax.

Michigan's Single Business Tax

Michigan's Single Business Tax (SBT) is unique in that it is the only value added tax in the region (and the nation for that matter). In general terms, value added is simply a measure of the firm's contribution to the value of a product or how much value it adds to inputs purchased from other firms. It is the sum of profits, wages and salaries, and depreciation, royalty, and interest expenses less dividend, royalty, and interest income. However, there are a number of special deductions, exemptions, and credits that have the effect of making the SBT a compromise between a true value added tax and a corporate income or profits tax. There is even an upper limit on the tax, called the

gross receipts reduction, that prevents a firm's tax base from exceeding 50 percent of gross receipts. Thus no firm in Michigan actually pays an SBT tax rate higher than 1.175 percent of gross receipts, one-half the statutory SBT rate, no matter how much higher the value added of the firm might be.

There are several other interesting features of the SBT. First, the SBT applies to all firms without regard to the legal form under which the business is conducted. That is very much unlike the corporate income tax which, of course, applies to corporations only. Second, the SBT is the "single" tax on business in Michigan in the sense that, upon adoption, Michigan phased out the corporate income tax, the franchise tax, the local property tax on business inventories, the business intangibles tax, and several other special fees and licenses. The goal of the State of Michigan in adopting the SBT was to simplify its business tax system and to provide more stability in business tax collections than existed with the old tax regime.

Apportionment of Income of Multistate Firms

In most states, the corporate income of multistate firms is apportioned to each of the states in which they operate using a three-factor apportionment formula that incorporates payroll, property, and sales. Sometimes the individual states assign special weights to one of the three factors, usually sales, or disregard one of the factors entirely. In this study, Prototypical Firm #2 is assumed to qualify for apportionment. The three factors in the apportionment formula are 33.3 percent payroll, 33.3 percent property, and 4 percent sales. The percents relate the proportion of in-state payroll, property, and sales to total payroll, property, and sales of the firm. We do not account for any feedback effects or estimate the total multistate tax burden of Firm #2.[1]

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[1] Feedback occurs, for instance, because the location of the firm's sales probably does not change when considering various sites, thus changing tax costs in all states. Although the results are not reported here, we did estimate the change in the total multistate tax burden of a firm that moves most of its payroll and property from Michigan to Indiana, yet continues to sell most of its goods in Michigan. The results were not significantly different than those reported elsewhere in this study assuming the firm remains in Michigan.

Although seven of the eight prototypical firms do not qualify for apportionment, that does not imply that 100 percent of sales are in-state. In accordance with federal legislation, interstate sales by commissioned salesmen or through wholesalers are generally not taxable at the destination of the shipment. However, states differ in whether or not interstate sales should be thrown back and included as in-state sales. It appears that Ohio and Minnesota are the only nonthrowback states in the Great Lakes region, while one-half of such sales are thrown back in Wisconsin. Since data are lacking on this subject, no specific accounting of throwback is made in this study. For the situations examined by Papke and Papke, it amounted only to about a 1 percent change in the after-tax rate of return. It should also be mentioned that in 1978, only 6.8 percent of all firms in Michigan filing SBT returns were apportioners (computer printout, Michigan Department of Treasury, December 10, 1982).

Estimating GCFV Costs for the Prototypical Firms

Individual state tax returns were completed for the prototypical firms. Completion of the 48 tax returns (six states times eight firms) allowed fuller consideration of the statutory provisions of the individual state tax codes. The full tax returns are not presented in this paper but they are available as part of the technical documentation to the study.

The statutory rates in 1984 described in Table GCFV-1 are modified in this study to reflect prospective tax costs rather than accounting or historical tax costs. The Illinois income tax rate is assumed to be 6.5 percent, whereas the statutory rate was actually scheduled to decrease from 7.3 percent to 6.5 percent July 1, 1984. The Michigan expanded small business tax credit effective January 1, 1984 is incorporated throughout the study. The Wisconsin income surtax of 10 percent is disregarded; it was scheduled to expire January 1, 1985.

The Michigan SBT levies the tax on the total compensation of employees, including all fringe benefits. Therefore, to estimate the full burden of the SBT, it is necessary to include an estimate of fringe benefits. The derivation

of wages and salaries is explained in the introduction to this paper, but there appear to be no consistent data on the value of the individual fringe benefits. The most significant of the fringe benefits are workers' compensation, unemployment insurance, the employer's portion of social security, pension, retirement, and profit sharing plans, health insurance, and life insurance. In lieu of constructing the individual components from a number of different but potentially inconsistent sources, the ratio of total supplementary labor costs to total wages by industry from the 1980 Annual Survey of Manufactures (U.S. Bureau of the Census, 1982) times the estimated 1983 wages and salaries is used as the estimate for total fringe benefits in this study. Total supplementary labor costs from this source appear to be consistent with the requirements of the Michigan SBT, but it is only a rough approximation.

To estimate the impact of the corporate income tax in the other Great Lakes states, important tax credits in Ohio and Wisconsin had to be taken into account. The State of Ohio allows a corporate income tax credit for a portion of the personal property tax paid on machinery and equipment acquired after January 1, 1978. The credit is equal to the difference between the amount of taxes paid on eligible property and the amount of taxes which would have been paid had it been assessed at only 20 percent of its true value. Since the assessment ratio is normally 34 percent, the net effect of this provision in the Ohio tax codes is to grant a 41.18 percent credit on the corporate income tax for personal property taxes paid on machinery and equipment that are eligible for the credit. It is arbitrarily assumed that eventually 80 percent of machinery and equipment investment will become eligible for the credit. Although it is currently unknown what percent of investment actually qualifies for the credit, it will be substantial and subject to litigation for some years to come. Given these uncertainties, the calculation of this credit for the prototypical firms is only a rough approximation.

The state of Wisconsin allows a corporate income tax credit for sales taxes paid on fuel and electricity used in manufacturing. The credit is calculated based on the cost of fuel and electricity purchased divided by 21. Since the Wisconsin sales tax rate is 5 percent, the credit amounts to over a 95 percent

refund of the sales taxes paid on fuel and electricity used in manufacturing. Fuel and electricity purchases in this study are limited to natural gas and electricity, over 90 percent of energy consumption in most industries, based on data by industry from the 1980 Annual Survey of Manufactures (U.S. Bureau of the Census, 1982). As in the other parts of this study, the assumption is that the industry average of U.S. purchases of natural gas and electricity to the value of shipments by industry are representative for the prototypical firms.

In most cases the summary tax data from the Internal Revenue Service and other sources offer a rich vein of information to complete the state returns. The goal was to at least take into account the major provisions of the state tax codes. By no means, however, were we able to account for all of the statutory provisions of each state. Loss carryovers and carrybacks are assumed to be zero. Where state income taxes are deductible on state tax returns, a rough estimate of 1984's tax bill is obtained and subsequently used as the deduction. State income taxes are deductible on state tax returns in three of the Great Lakes states, namely, Michigan, Minnesota, and Wisconsin.

It was not possible in this study to specifically account for the state impacts of the federal Accelerated Cost Recovery System (ACRS) for depreciable assets adopted in 1981 and 1982. ACRS may worsen Michigan's relative position since it has no impact on the value added tax base of the SBT but reduces the tax base in those states with corporate income taxes that follow the federal approach. On the other hand, it is also possible that we slight the SBT by assuming a steady stream of investment because all of the tax benefit or saving occurs in the first year or so when the deduction is taken. Thus, if investment tends to be uneven, we may be showing a large amount of depreciation but not the first year advantage of the SBT.[2] To complicate matters more, the future of ACRS and many other features of the federal tax system is clouded since the U.S. Treasury has proposed that it be eliminated as part of its sweeping package of proposals designed to simplify the federal tax system, announced in late 1984.

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2 The author is indebted to Ronald C. Fisher, Michigan Deputy State Treasurer, for this point.

At this juncture, it is perhaps advisable to repeat the basic method of this study as it applies to these issues. The prototypical firms are representative in that they were constructed from industry averages where appropriate. That these firms are on-going, permanent operations implies a steady stream of real investment at the industry average. Although we do not specifically account for ACRS due to data limitations or for the possibility of uneven investment streams, the utilization of industry averages has the advantage of being empirically based. Within the limitations discussed, the estimates of this study thus account for average industry investment and average depreciation claimed by those same industries.

The empirical estimates of the GCFV tax costs are presented in Table GCFV-2. These tax costs are indexed to Michigan in Table GCFV-3 and shown as a percent of sales in Table GCFV-4.

Results and Conclusions

The GCFV tax costs for the prototypical firms tend to be higher in Indiana, lower in Ohio, Minnesota, and Michigan, and much lower in Illinois and Wisconsin. The variation in the GCFV tax costs across the states is significant, but the GCFV tax costs are almost always less than 1 percent of sales and usually less than one-half of 1 percent of sales. In quantitative terms the GCFV taxes may be less important than many people think, at least judging from the attention given these taxes by the popular media.

The most notable feature of these results is the significant change in relative positions of the states by type of firm. While Michigan's GCFV tax costs tend to be average for most of the prototypical firms, there is one case where it is the high tax cost state (large firm with losses) and another case where it is the low tax cost state (small firm). Minnesota's relative position also varies to the maximum extent possible. Since there is such a wide disparity in the results across the prototypical firms, any generalizations from these results must be interpreted with caution. It appears that the most general conclusion is that the individual state GCFV tax structures are so

complex that individual firms may find themselves with wildly different tax costs across the states.

From an economic development perspective, it is interesting to note that Michigan is not the only state that imposes a GCFV tax on firms with losses. Indiana has a gross receipts tax and both Ohio and Illinois have a franchise or net worth tax. In fact, Michigan's SBT can be less than the GCFV taxes in any of the other Great Lakes states for small firms.

The specific provision of the Michigan SBT that reduces the tax burdens of small firms is the small business tax credit which was significantly expanded in 1984. The new expanded credit under Public Acts 216 and 250 extends eligibility for the credit to firms with $6 million in sales from the previous $3 million level and allows an increase in the maximum credit itself from 50 percent to 90 percent of the tax liability. The SBT costs for the three small prototypical firms before any credit is applied and comparison of the effects of the 1983 credit and the new credit effective in 1984 are illustrated in Table GCFV-5. Without the new small business credit the three smallest firms in Michigan would have the highest GCFV tax costs in the region.

There is no doubt that some Michigan firms with less than $6 million of sales experienced dramatic reductions in their SBT costs for 1984. The tax burden of the Michigan SBT is less than one-fifth of 1 percent of sales for the small firms examined in this study. In one case (Firm #4), Michigan is actually the lowest tax cost state in the region. Thus our study indicates that the SBT is not overbearing for small firms.

Other studies confirm this finding that the SBT liability of small firms tends to be modest (Michigan Office of Revenue and Tax Analysis, October 1981). According to the Michigan Department of Treasury, almost 59.5 percent of all businesses in Michigan paid no SBT tax in 1981, and 78.8 percent of those firms with some SBT liability, owed less than $5,000.[3] We are not

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[3] Based on this information, it is clear that the prototypical firms of this study are not representative of all Michigan business firms nor were they intended to be so. It did not appear useful to investigate firms with less than $2.5 million of sales. It is also true that many of these firms would not be corporations, so it would complicate the interstate comparisons.

surprised by this finding since most of the special provisions and credits of the SBT appear to favor small firms. In addition, it appears difficult to defend the notion that the Michigan SBT retards firm start-ups. Besides the favorable treatment of small, new firms under the SBT, recall from Section III that Michigan offers a 100 percent refund on the SBT of any federal penalty taxes paid by new firms as a result of Michigan's UI debt; the result is that the state shares the lowest UI tax rate for new firms with one other state in the region.

Another special provision of the Michigan SBT is the total compensation reduction. It allows firms to reduce the SBT tax base to the extent that total compensation exceeds 63 percent of that base. The total reduction cannot exceed 37 percent. This provision obviously benefits labor-intense firms, but it also aids firms with losses since labor's share of value added rises for these firms.

The effects of the compensation reduction on the SBT liabilities of the prototypical firms are presented in Table GCFV-6. In general, seven of the eight firms qualify for the reduction to some degree. The tax savings as a percent of the SBT liability are highest for two firms with large losses, Firms #3 and #5. There are also significant savings for the two firms with the highest labor intensity as a percent of sales, Firms #4 and #6. Therefore it would appear that the compensation reduction is having the intended effects of reducing the tax burdens on firms where the labor share of value added is highest.

The impact of the broad tax base of Michigan's SBT can be seen clearly in Firm #3, the large firm with large losses. The SBT burden appears modest in absolute terms, about one-third of 1 percent of sales, but it is the highest in the region. Stated differently, although the compensation reduction reduces the SBT burden for this firm by over 50 percent, its actual remaining tax liability is still nearly 40 percent higher than the next highest state, Indiana. In general there appears to be little doubt that firms with large losses pay higher GCFV taxes in Michigan than other states, except for small firms which qualify for the small business credit.

Many questions have been raised about the fairness of taxing firms with losses. Although it is beyond the scope of this study to address these issues, it should be mentioned that states generally impose broad based taxes rather than pure profits taxes to increase the stability of state revenues. The fluctuation of state revenues has been so severe in Michigan that the state has been close to bankruptcy on several occasions. If the goal of stability is accepted, then the SBT has been successful on that score, as shown in Table GCFV-7. Total statewide tax collections from the SBT have been about one billion dollars for the last six years.

From an economic development viewpoint a relatively stable state tax system may offer several advantages to firms. First, it helps firms in their own tax planning because they can better anticipate future tax costs. In that regard it should be mentioned that Michigan was one of the only states in the region which did not permanently raise or impose special surtaxes on business firms during the last recession.

Second, the broad tax base coupled with the relatively low tax rate characteristic of the value added taxes also means that tax costs rise slowly with profits. According to one study (Barlow and Connell 1982), the effective SBT tax rate rises with firm size. That may be true because of the special exemptions and credits of the SBT, virtually all of which are designed for small firms. But Michigan may become more competitive with other states as profit rates rise because of the sharply higher tax rates common with corporate income taxes. So Firm #3 may currently have the greatest GCFV tax liability across the states, but its SBT tax burden may be average or below average compared to the other Great Lakes states, more like Firms #1 and #2 once it moves toward more normal times.

In summary, it appears that for profit rates commonly experienced by firms, usually not more than about 5 percent of sales, the Michigan SBT imposes no higher burdens than other states. The relative position of Michigan is less favorable for firms with losses which do not qualify for the small business credit and may be more favorable for firms with higher than average profits. There is no doubt that the complexity of the various GCFV taxes implies that

this study has not evaluated very many of the specific tax situations that firms may actually face; that constitutes one of the study's limitations. It may also indicate an opportunity for future research.

Table GCFV-1

STATE GROSS RECEIPTS, CORPORATE INCOME, FRANCHISE AND VALUE ADDED TAXES IN THE GREAT LAKES STATES

State	Type of Tax	Rate (percent)	Comments
Illinois	Corporate Income	7.3	Scheduled to be reduced to 6.5% in July, 1984. Includes 2.5% personal property replacement income tax that is distributed to localities.
	Franchise	.1	Net worth tax base.
Indiana	Gross Receipts	.325 - 1.3	Beginning January 1, 1985, tax decreased annually by .0125 percent until phased out January 1, 2010.
	Corporate Income	3	Pays greater of gross receipts or corporate income tax.
	Supplemental Corporate Income	4	Supplemental tax based on net income less the greater of gross income or net income tax.
Michigan	Single Business Tax (value added)	2.35	Tax base is value added modified by various special deductions, exemptions and credits. Imposed on all businesses without regard to legal form under which the business is conducted. Upper limit on tax of 1.175 percent of gross receipts.
Minnesota	Corporate Income		
	First $25,000	6	
	Over $25,000	12	
Ohio	Corporate Income		Pays greater of corporate income or franchise tax. Surtax of 5.4 percent. Pays litter tax in addition to corporate income/franchise taxes, $5,000 maximum.
	First $25,000	5.1	
	Over $25,000	9.2	
	Franchise	.582	Net worth tax base.
Wisconsin	Corporate Income	7.9	Surtax of 10 percent until January 1, 1985.

Source: Instructions for individual state tax returns and state tax administrators.

Table GCFV-2

ESTIMATED STATE CORPORATE INCOME, FRANCHISE, AND VALUE ADDED TAXES FOR THE PROTOTYPICAL FIRMS

(in dollars)

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio[1]	Wisconsin[2]
1	26	1,162,648	1,734,614	1,833,795	2,486,077	1,357,250	1,004,507
2	28	1,514,822	1,714,276	999,382	1,522,306	1,083,429	859,628
3	37	30,117	649,523	907,421	0	234,259	0
4	38	4,190	12,719	4,140	12,881	4,428	5,174
5	35	518	9,144	975	0	5,348	0
6	73	288	9,703	3,530	709	1,317	0
7	36	69,251	99,230	167,928	234,196	86,244	79,612
8	20	75,696	102,590	123,720	204,516	92,132	78,596

1. Includes applicable credit for personal property tax paid.

2. Includes applicable credit for sales taxes paid on electricity and natural gas purchases.

Table GCFV-3

ESTIMATED STATE CORPORATE INCOME, FRANCHISE, AND
VALUE ADDED TAXES RELATIVE TO MICHIGAN FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	63	95	100	136	74	55
2	28	152	172	100	152	108	86
3	37	3	72	100	0	26	0
4	38	101	307	100	311	107	125
5	35	53	938	100	0	549	0
6	73	8	275	100	20	37	0
7	36	41	59	100	139	51	47
8	20	61	83	100	165	74	64

Table GCFV-4

ESTIMATED STATE CORPORATE INCOME, FRANCHISE, AND VALUE ADDED TAXES AS A PERCENT OF SALES FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	0.39	0.58	0.61	0.83	0.45	0.33
2	28	0.50	0.57	0.33	0.51	0.36	0.29
3	37	0.01	0.22	0.30	0.00	0.08	0.00
4	38	0.17	0.51	0.17	0.52	0.18	0.21
5	35	0.02	0.30	0.03	0.00	0.18	0.00
6	73	0.01	0.39	0.14	0.03	0.05	0.00
7	36	0.35	0.50	0.84	1.17	0.43	0.40
8	20	0.25	0.34	0.41	0.68	0.31	0.26

Table GCFV-5

EFFECTS OF MICHIGAN'S SMALL BUSINESS TAX CREDIT FOR THE PROTOTYPICAL FIRMS

(in dollars)

Firm	SIC Code	Sales	SBT Tax Due Assuming		
			No Credit	1983 Credit	1984 Credit
4	38	2,500,000	23,970	14,933	4,140
5	35	3,000,000	9,749	9,749	975
6	73	2,500,000	19,344	12,163	3,530

Note: The expanded 1984 small business tax credit of the SBT is used in all of the tax cost calculations of this study.

Table GCFV-6

EFFECTS OF MICHIGAN'S COMPENSATION
REDUCTION FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Sales	SBT Tax Due Assuming		Tax Savings
			No Compensation Reduction	With Compensation Reduction	
1	26	300,000,000	1,875,046	1,833,795	41,251
2	28	900,000,000	999,382	999,382	0
3	37	300,000,000	1,440,359	907,421	532,938
4	38	2,500,000	5,594	4,140	1,454
5	35	3,000,000	1,548	975	573
6	73	2,500,000	4,906	3,530	1,376
7	36	20,000,000	194,024	167,928	26,096
8	20	30,000,000	128,508	123,714	4,794

Note: Firm #2 does not qualify for the Michigan Compensation Reduction.

Table GCFV-7

STATEWIDE TAX COLLECTIONS FROM
THE MICHIGAN SINGLE BUSINESS TAX

Year	Revenue (in millions)	Percent Change From Previous Year
1978	899.4	---
1979	1,001.3	11.3
1980	1,076.0	7.5
1981	942.2	-12.4
1982	943.1	0.1
1983	1,041.7	10.5
1984 (est.)	1,232.0	18.3

Source: Michigan Department of Treasury.

V. PROPERTY TAXES

Introduction

Property taxes are local taxes levied against a proportion, called the assessment ratio, of the true cash value of the property where true cash value is defined by the individual states. The property tax rates, true cash value, and the administration of the tax all may vary across local jurisdictions, while the states are responsible for the broader aspects of the property tax program such as the definition of true cash value, the type of property taxed, i.e., the components of the property tax base, various regulatory functions and data reporting. Thus there are many reasons to think that property tax costs for business firms may vary significantly across and within states.

Dispersion of Local Property Tax Rates

Since there are literally thousands of separate local property tax rates within an individual state, it is important to gain some appreciation of the degree of variation that actually exists. That is done in Figure P-1 and Table P-1. The figure presents the average property tax rates in Michigan by county for 1982, while the table presents summary data for 1982 about property tax rates for major cities across all of the Great Lakes states.

The average property tax rates in Figure P-1 are composites of all rates applicable within the county based on data from the Michigan Department of Treasury. There is a clear tendency for property tax rates in Michigan to be higher in the more populous and industrialized southern part of the state. But there is also considerable dispersion of the rates across the counties. It should be emphasized that the composite county averages mask the differences within the counties.

The average property tax rates in Table P-1 are composites also but they are statewide averages of all rates applicable to major cities as reported by two popular tax services, namely, Prentice-Hall and Commerce Clearing House. The rates are generally based on data from 1982. According to these two

sources, the range of property tax rates across the major cities within a state are large, usually 100 percent or more.

The accuracy of some of the specific estimates in Table P-1 can be challenged. It appears strange that the composite average for Michigan's major cities as reported by Prentice-Hall is less than the average statewide rate in any year since 1970, at least as reported by the Committee on Taxation, Michigan House of Representatives, and the Committee on Finance and Municipalities, Michigan State Senate (May 1983). There also does not appear to be any city in Michigan, let alone a major city, with a composite property tax rate as low as $4.70 per $1,000 of assessed valuation or as high as $104.21 per $1,000 of assessed valuation, the Prentice-Hall range. Several outside reviewers of this study and state tax administrators expressed concern about the validity of such third party data and suggested dealing with the states directly. Basically that is what has been done throughout this study.

Local Property Tax Rates in an Interstate Business Tax Cost Study

There is a serious question as to which local property tax rates are appropriate for an interstate study of business tax costs. Site specific rates have the advantage of being the known rates that actually exist in a given locality but may be atypical of many other sites in the state. Statewide averages have the advantage of being composites of the many local rates in the state yet that statewide rate may not exist in any given locality. It appears that local property tax rates vary so much within a state that neither approach is truly adequate. Both are legitimately subject to criticism.

In this study, statewide average property tax rates are used to calculate the property tax costs of the prototypical firms. Time and budget constraints did not permit consideration of enough sites within each state to assure being representative, nor did we feel comfortable in arbitrarily picking sites. We also rejected the utilization of some composite average of the rates in major cities because of the industrial location trends of the last decade or so. Specifically, manufacturing firms have increasingly abandoned central city locations and moved to the suburbs or even to some rural locations where more

land is available. Given these trends, we decided that the average statewide property tax rates, which are actually an amalgam of higher city rates and lower rural rates, were the most supportive of the goals of this research. State policymakers must deal with a multitude of broad issues in property taxation such as property tax abatements, the determination of market values, the effects of inflation, exemptions for manufacturing machinery and equipment, etc., all of which may change statewide prevailing property tax rates.

Property Tax Base

In general, the property tax base is real and tangible personal property. Real property is land and buildings. The tangible personal property of firms is usually machinery and equipment and inventories. The tax status of these different types of property across the Great Lakes states is illustrated in Table P-2. Only land and buildings are taxed throughout the region. Of the remaining two components of the property tax base, machinery and equipment are taxed in three states, Indiana, Michigan, and Ohio, while inventories are taxed in only two states, Indiana and Ohio.

The true cash value of each type of property is defined by the individual states. Since the statutory definitions are clear for machinery and equipment and inventories and lead directly to estimating those tax costs for the prototypical firms, those two components of the property tax base are not discussed further in this introduction. However, there are a number of problems in determining the true cash value of land and buildings.

Market Value of Land and Buildings. In all of the Great Lakes states except Indiana, the true cash value of land and buildings is nominally market value. But the original cost data in the IRS tax summaries on which this study is based provide no information whatsoever about the acquisition dates of the property assets. Furthermore, the actual number of market transactions involving business property can be very small, so it is notoriously difficult to assess the value of business property.

Although assessment practices actually differ across the Great Lakes states, the market value of industrial property is usually determined using the

cost approach since direct market data are not available. Briefly it involves calculating replacement cost for the building less depreciation and functional obsolescence plus an adjustment for local market conditions. Although various manuals are available, it should be clear that functional obsolescence due to technological change and market conditions are more subjective. The state equalization process will iron out some of the differences in assessment practices across local jurisdictions, but market conditions do indeed vary across a state. The bottom line is that market values may vary both within a state and between states for what appear to be similar business properties.

In this study, it is assumed that in those states which are nominally market value states, the actual market values of land and buildings are identical for the prototypical firms across the states. That assumption follows the work of earlier researchers and appears desirable on the surface since it supports the notion of identically situated firms. But we have already shown that there is no guarantee that market values or assessment practices are identical in states which are nominally market value states. Unfortunately, the problem appears intractable, so the assumption of identical market values constitutes one of the limitations of this study.

The Effects of Inflation on the Market Value of Land and Buildings. In actual practice it is not difficult for assessors to account for inflation since replacement costs rise while there is no change in physical depreciation. If the inflation rate exceeds the depreciation rate and there are no changes in other variables, then the assessed market value will rise. That may have occurred for many business properties in the 1970s and early 1980s, given the high inflation rates that prevailed in many of those years. However, the estimation of the effects of inflation is a problem for this study because of the lack of data in the summary IRS tax information about the dates of acquisition or values of those purchases. The IRS data base merely reports the total original cost of all land and buildings.

In this study, the market values of land and buildings are assumed to be 50 percent higher than the original cost data in the IRS summary tax information. That is admittedly but a rough attempt to account for the inflation of the last

decade or so. According to the capital stock estimates from the U.S. Bureau of Economic Analysis (March 1982, p. 117), the average age of structures in manufacturing is nearly 11 years. If that is indicative of the firms in this study, it is almost a certainty that average property values have risen, since the inflation in the prices of new industrial structures in the last 11 years has been about 130 percent (U.S. Bureau of Economic Analysis, July 1983, p. 89).

In short, it is assumed that, on average, inflation has outdistanced depreciation for the prototypical firms, so market values have risen. According to several property tax administrators and assessors, this approach probably understates the actual market values, given the severe inflation in the last decade or so, but probably constitutes the only viable assumption. Since any errors in this assumption affect only the absolute magnitude of the property taxes across all of the states identically, those errors do not bias the interstate comparisons of property taxes. However, they may bias the comparisons of the total tax burdens.

Property Tax Abatements

Finally, it should be mentioned that the effects of property tax abatements are not included in the estimates of the property tax costs for the prototypical firms in this section. Four states in the Great Lakes region, Indiana, Illinois, Michigan, and Ohio, allow such abatements, while the remaining two states, Minnesota and Wisconsin, do not. Thus the estimates of property tax costs here are those that exist for firms who do not have significant abatements currently or that would exist without property tax abatement laws. The possible effects of property tax abatements are explored later in Section VII of this paper.

Estimating Property Tax Costs for the Prototypical Firms

The statewide average property tax rates and assessment ratios utilized in this study are presented in Table P-3. As mentioned earlier, the taxable value of property is a product of its true cash value as defined by the individual

states and the assessment ratio in that state. The tax rates in the table are then applied directly to those taxable values.

The data in Table P-3 were obtained from the individual states. The statewide average property tax rates are based on data from 1982 for Illinois, Michigan, and Ohio, 1983 for Minnesota and Wisconsin, and 1984 estimated for Indiana. These are net rates rather than gross or nominal rates. For instance, both Ohio and Wisconsin have general state credits or offsets that amount to 10 percent of the local property tax rate; that credit is about 20 percent in Indiana. Ohio also provides for a general state credit for the increase in the value of real property due to inflation.

Given the data for the assessment ratios and estimates for the statewide average property tax rates, the primary task in estimating the property tax costs for the prototypical firms is to determine the true cash value for the three components of the property tax base. Those calculations must necessarily begin with the original cost data for the property assets of the prototypical firms as presented in Table P-4. Remember that the data for the prototypical firms are original cost estimates from summary IRS tax returns by industry. The division of inventories between finished goods, goods in process, and raw materials, is not available from the IRS data, so it was estimated from the published annual reports of a selected number of private firms.

Land and Buildings

The true cash value of land and buildings in all of the Great Lakes states except Indiana is nominally market value. As discussed earlier, the market values are assumed to be identical across the states for the prototypical firms and 50 percent higher than the original cost data for land and buildings.

In Indiana, true cash value of land and buildings is not market value but replacement cost less depreciation. The replacement cost is estimated as of January 1, 1975 (Indiana State Board of Tax Commissioners, page G-iii). Replacement cost less depreciation in 1975 for the prototypical firms is roughly approximated by reducing the 1983 market values to account for the

inflation or increases in replacement costs since 1975. According to the implicit price deflator for structures from the national income accounts, as presented in Table P-5, prices for both industrial and commercial structures increased by approximately 80 percent from December 31, 1974 to December 31, 1982. The implicit assumption is that market values and replacement costs less depreciation are identical in 1975 in Indiana.

Machinery and Equipment

The true cash value of machinery and equipment is its depreciated market value as defined by the individual states. The valuation schedules currently in effect for average-lived assets are shown in Table P-6. These schedules may have no relation to physical depreciation or to actual cash value. In Indiana, machinery and equipment are valued at only 40 percent of their original cost in the first year versus over 90 percent in the other three states. It would appear that Indiana is deliberately attempting to use the low valuation of machinery and equipment as a general business tax incentive to improve the attractiveness of investment in such equipment.

According to the U.S. Bureau of the Census, the average age of machinery and equipment is about five years in the manufacturing sector (U.S. Bureau of Economic Analysis, March 1982, pp. 116-117). In the absence of any information from the IRS data base about the acquisition dates or prices of machinery and equipment, we assume that (1) the average age of machinery and equipment for the prototypical firms is five years, (2) the investment stream is steady, and (3) the investment by the prototypical firms occurs in average-lived assets. Thus the overall average reported in the table reflects the percentage value of the original cost of machinery and equipment that is subject to property taxation. This average times the original cost of machinery and equipment is the approximation of the true cash value of machinery and equipment for the prototypical firms. The net effect of these calculations is that true cash value is given for a steady stream of real investment over nine years.

Machinery and equipment is exempt from property taxes in Illinois and Minnesota and exempt in Wisconsin if used in manufacturing. Special tools with

limited lifetimes related to model changeover are tax exempt in many of the Great Lakes states, including Michigan, or are taxed at more favorable rates than other machinery and equipment. These special tools are not specifically considered in this study. There does not appear to be any data on the importance of special tools as a part of total investment, nor is it likely that special tools are a significant portion of the property assets for most firms outside auto assembly and manufacturing. It should also be noted that Ohio allows a credit for a portion of the personal property tax paid on machinery and equipment as part of the state corporate income tax. That credit is calculated in this study as part of the Ohio corporate income tax; it amounts to about a 40 percent reduction in property taxes for eligible machinery and equipment.

Inventories

Inventories are taxed in two states, Indiana and Ohio. While Ohio makes no distinction as to the stage of production, i.e., raw materials, goods in process, or finished goods, Indiana exempts the percentage of finished goods destined for interstate sales and allows a minimum valuation adjustment of 35 percent to reflect overhead costs (Indiana State Board of Tax Commissioners, pp 21-32). The net effect of these adjustments is to significantly reduce the importance of inventory taxes in Indiana. The details of the inventory taxes are not discussed further here.

Given the estimates or approximations of true cash value of land and buildings, machinery and equipment, and inventories, it is possible to determine the property tax costs of the prototypical firms. Again, the tax liabilities are simply the product of the true cash value times the assessment ratio times the appropriate tax rate. The estimated total property tax costs of the prototypical firms are presented in Table P-7. Those costs are indexed to Michigan in Table P-8 and shown as a percentage of sales in Table P-9.

Results and Conclusions

The estimates of the property tax costs tend to be highest in Michigan, above-average in Minnesota and Ohio, lower in Indiana, and much lower in

Illinois and Wisconsin. Property tax costs can be as high as 1 percent of sales and can vary by about 100 percent from the lowest tax cost state to the highest tax cost state.

The total property tax costs are a function of the tax rates, the assessment ratios, and the property tax base. An increase in any one of these factors will raise property taxes, all other things equal. Although unambiguously true, actual property tax costs represent the interaction of all factors simultaneously. So it becomes somewhat academic to identify those states with the highest or lowest rates, base, etc., because a high rate combined with a low base may still lead to low costs. Still, Illinois and Wisconsin, two of the states that tax only real property, also have the lowest property tax costs, while Minnesota, the third state which taxes real property only, ends up with above average costs because it has the highest property tax rates in the region.

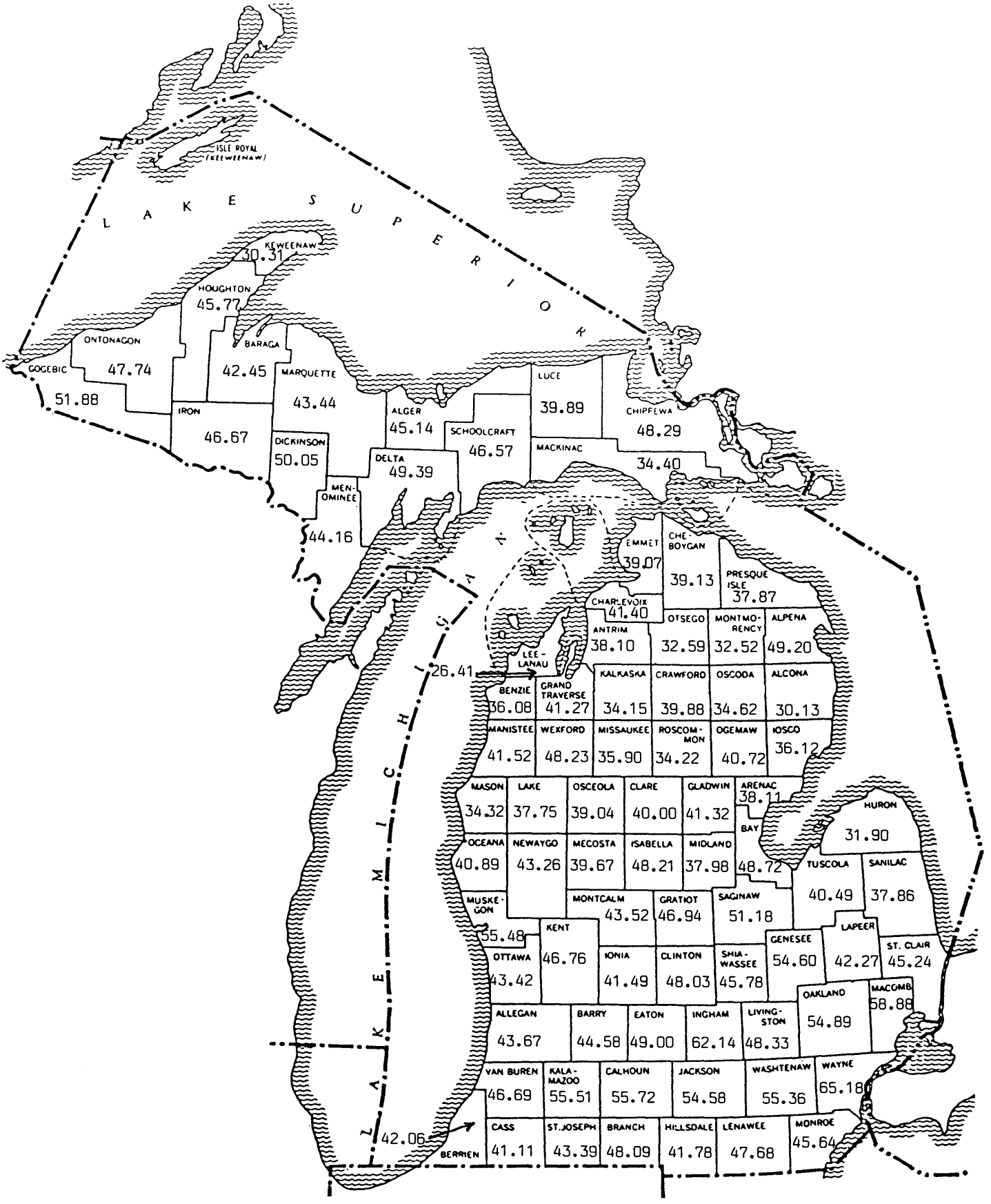
On the other hand, it is interesting to note that Indiana's property tax costs are average to below average in spite of taxing all types of real and tangible personal property. This is due to the state's unique, at least for the Great Lakes region, regulatory and administrative procedures. Indiana is the only state in the region where land and buildings are valued at their replacement cost in 1975. In Indiana, the value of machinery and equipment is also lowered by using an extremely generous depreciation schedule, and there are several special procedures in the inventories tax that act as exemptions. The net result of all of these features of the Indiana property tax system is to lower property tax costs for business firms from what they would otherwise be.

As mentioned earlier, the effects of property tax abatements will be explored in Section VII of this paper, so the discussion of property tax costs here is somewhat limited. However, it appears that Michigan has the highest property tax costs in the region without property tax abatements. Thus, those Michigan firms which do not seek abatements aggressively, do not qualify for abatements, or are located in local jurisdictions reluctant to grant abatements, may incur higher property tax costs than similar firms in the other Great Lakes states.

Finally, it should be reiterated that the property tax cost comparisons have a certain number of limitations inherent in the method used to obtain them. For instance, the market value of similar properties may vary across the Great Lakes states, and local appraisers may differ in estimating that market value. It is also true that the property tax rates utilized in this study are statewide averages for what is actually a local tax. So there is potentially a significant margin of error in calculating the property tax costs for the prototypical firms. Still, the statewide averages used in this study should be indicative of the general features of the property tax system in each state.

Figure P-1

AVERAGE PROPERTY TAX RATES PER $1,000 OF ASSESSED VALUE FOR MICHIGAN, 1982, BY COUNTY



Source: State Tax Commission, Michigan Department of Treasury.

Table P-1

COMPARISON OF PRENTICE-HALL AND COMMERCE CLEARING HOUSE
AS SOURCES FOR ESTIMATES OF STATEWIDE AVERAGE PROPERTY TAX RATES
(in dollars)

State	Prentice-Hall Property Tax Rate per $1,000 of Assessed Value		Commerce Clearing House Property Tax Rate per $1,000 of Assessed Value	
	Average for Major Cities	Range	Average for Major Cities	Range
Illinois	82.84	44.08 - 143.11	74.89	20.92 - 120.02
Indiana	90.44	42.80 - 183.49	96.36	54.97 - 183.49
Michigan	47.50	4.70 - 104.21	62.10	36.92 - 83.43
Minnesota	100.07	72.26 - 134.58	110.74	61.98 - 189.42
Ohio	57.61	34.70 - 127.50	57.51	34.20 - 122.50
Wisconsin	45.10	19.16 - 130.79	40.69	11.61 - 140.66

Sources: Prentice-Hall, All State Tax Guide, November 29, 1983, pp. 251-253; and Commerce Clearing House, State Tax Guide, January, 1984, various pages.

Table P-2

TAX STATUS OF BUSINESS PROPERTY
IN THE GREAT LAKES STATES

Type of Property	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
Land & Buildings	Taxed	Taxed	Taxed	Taxed	Taxed	Taxed
Machinery & Equipment	Exempt	Taxed	Taxed	Exempt	Taxed	Exempt[1]
Inventories	Exempt	Taxed	Exempt	Exempt	Taxed	Exempt

1. Exempt if used in manufacturing.

Table P-3

ASSESSMENT RATIOS AND STATEWIDE AVERAGE PROPERTY TAX RATES PER $1,000 OF ASSESSED VALUE IN THE GREAT LAKES STATES

State	Assessment Ratio[1]	Statewide Average Property Tax Rate per $1,000 of Assessed Value[2]
Illinois	33.3%	$70.07
Indiana	33.3%	$67.29
Michigan	50.0%	$52.71
Minnesota	43.0% [3]	$92.101
Ohio	34.0% [4]	$51.25 [4]
Wisconsin	100.0%	$20.72

1. The assessment ratios are those in effect in 1984 or scheduled to be effective not later than 1/1/85.

2. The statewide average property tax rates are based on the most recently available information from the revenue departments of the individual states, 1982 for Illinois, Michigan, and Ohio, 1983 for Minnesota and Wisconsin, and 1984 estimated for Indiana.

3. The first $60,000 of market value is assessed at 28 percent.

4. Assessment ratio and property tax rates for tangible personal property only. Real property is assessed at 35 percent and taxed at a rate of $36.50 per $1,000 of assessed value. The difference is due to a 10 percent Ohio credit for local real property taxes plus an adjustment for the increase in real property values due solely to inflation.

Table P-4

ORIGINAL COST DATA FOR PROPERTY ASSETS FOR THE PROTOTYPICAL FIRMS

(in dollars)

Item	Firm/SIC Code							
	1 26	2 28	3 37	4 38	5 35	6 73	7 36	8 20
Land and Improvements	7,136,123	3,050,345	2,440,607	71,031	23,963	30,285	148,196	246,826
Buildings	42,009,218	37,670,011	28,381,930	176,657	421,908	286,182	1,792,167	1,469,394
Machinery and Equipment	133,029,189	113,010,032	89,876,111	358,667	855,326	581,037	5,100,786	5,877,575
Inventories								
Finished Goods	9,459,703	11,888,542	15,618,463	35,802	102,164	23,690	523,587	1,513,583
Goods in Process	9,932,689	12,482,969	16,399,386	69,216	197,517	40,200	1,012,267	165,118
Raw Materials	12,139,953	15,256,963	20,043,695	133,659	381,411	7,896	1,954,723	1,073,267

Table P-5

IMPLICIT PRICE DEFLATORS FOR PURCHASES OF STRUCTURES, BY TYPE

(1972 = 100)

Property	1974[1]	1982[2]
Industrial	126.9	227.6
Commercial	126.8	227.5

1. Survey of Current Business, U.S. Department of Commerce, July 1977, Table 7.13, p. 57.

2. Survey of Current Business, U.S. Department of Commerce, July 1983, Table 7.19, p. 89.

Table P-6

VALUATION OF AVERAGE-LIVED ASSETS FOR TANGIBLE PERSONAL PROPERTY TAXATION AS A PERCENT OF ORIGINAL COST IN THE GREAT LAKES STATES[1]

Year Purchased	Indiana	Michigan	Ohio	Wisconsin[2]
1	40.0	93.0	93.2	91.7
2	60.0	79.0	82.8	78.7
3	55.0	67.0	72.4	70.7
4	45.0	60.0	62.0	65.2
5	37.0	54.0	52.5	60.6
6	30.0	49.0	42.2	53.7
7	25.0	46.0	36.3	47.6
8	20.0	44.0	30.5	42.0
9	16.0	42.0	24.6	37.1
Average[3]	36.44[4]	59.33	55.16	60.81

1. Illinois and Minnesota do not tax tangible personal property.

2. Tangible personal property is exempt in Wisconsin if used in manufacturing.

3. If machinery and equipment in the manufacturing sector tend to be five years old and discarded at the end of nine years, then this average represents the percentage value of the original cost of machinery and equipment that is subject to property taxation.

4. According to the Indiana Board of Tax Commissioners, firms in that state are permitted to use the federal ACRS system to determine the useful lifetime of machinery and equipment. The net effect will be to increase the probability that the depreciated value of machinery and equipment will tend toward the regulatory minimum of 30 percent of original cost.

Table P-7

ESTIMATED PROPERTY TAX COSTS WITHOUT ABATEMENTS
FOR THE PROTOTYPICAL FIRMS
(in dollars)

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	1,735,551	2,330,913	4,022,939	2,918,657	2,769,826	1,527,437
2	28	1,438,025	2,094,089	3,376,850	2,418,170	2,557,041	1,265,589
3	37	1,088,487	1,951,930	2,623,833	1,830,188	2,361,665	957,964
4	38	8,745	11,029	15,398	13,881	12,352	7,696
5	35	15,746	24,486	31,001	25,658	28,633	13,858
6	73	11,176	11,699	21,596	17,971	12,900	17,157
7	36	68,523	124,909	156,465	114,457	147,032	60,306
8	20	60,608	98,958	159,751	101,123	108,082	53,340

Table P-8

ESTIMATED PROPERTY TAX COSTS WITHOUT ABATEMENTS RELATIVE TO MICHIGAN FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	43	58	100	73	69	38
2	28	43	62	100	72	76	37
3	37	41	74	100	70	90	37
4	38	57	72	100	90	80	50
5	35	51	79	100	83	92	45
6	73	52	54	100	83	60	79
7	36	44	80	100	73	94	39
8	20	38	62	100	63	68	33

Table P-9

ESTIMATED PROPERTY TAX COSTS WITHOUT ABATEMENTS AS A PERCENT OF SALES FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	0.58	0.78	1.34	0.97	0.92	0.51
2	28	0.48	0.70	1.13	0.81	0.85	0.42
3	37	0.36	0.65	0.87	0.61	0.79	0.32
4	38	0.35	0.44	0.62	0.56	0.49	0.31
5	35	0.52	0.82	1.03	0.86	0.95	0.46
6	73	0.45	0.47	0.86	0.72	0.52	0.69
7	36	0.34	0.62	0.78	0.57	0.74	0.30
8	20	0.20	0.33	0.53	0.34	0.36	0.18

VI. SALES TAXES

Introduction

General sales and use taxes are important sources of revenue for most states. Sales taxes are levied on all or a portion of retail sales, whereas use taxes are levied on purchases out of state that are used within the state. Since the primary distinction between these two taxes is often only the location of the original purchase, sales and use taxes are referred to hereafter in this study simply as sales taxes.

Although retail firms are generally legally liable for the collection of sales taxes, the consensus view of economists is that the burden of the sales tax is shifted to the buyers of those retail goods. That approach is followed here. Thus, to the extent that the prototypical firms engage in retail sales subject to sales taxation, it is assumed that the burden of the tax is passed forward to the firms' customers. However, to the extent that the prototypical firms themselves make retail purchases subject to sales taxation, then they bear the initial burden of the tax. In brief, the business portion of the sales tax in this study is limited to business purchases subject to the tax without regard to legal liability.

Many purchases of the firm are almost universally exempt from state sales taxation. For instance, raw materials held for processing that eventually become a part of the final product and goods held for resale are usually exempt. Other purchases are frequently taxed. These include office supplies and equipment and building materials, among others. Then there are other categories of goods where the tax status varies across the states, such as machinery and equipment, electricity, and natural gas purchases.

The sales tax costs are the product of the sales tax rates and the total purchases of the firm subject to the tax, i.e., the sales tax base. The appropriate sales tax rates are clear and unequivocable except in a few cases. However, there are two general problems in estimating the business portion of sales taxes.

First, there may be a certain amount of ambiguity in determining the sales tax base. State statutes identify only the broad categories of taxable goods rather than the detailed or actual items taxed. The actual items taxed are determined by administrative rules, regulations, and interpretation. Thus the application of the general rules may be subject to some degree of administrative discretion. Firms may also submit administrative appeals of any adverse tax rulings by state sales tax examiners. If resolution of the conflict fails at the administrative level, firms and/or the state may seek redress in the courts.

Besides the possible difficulties in identifying the actual items taxable, the second problem is one of quantification. When collecting sales taxes, retail firms do not differentiate between customers who are consumers and those who are other business firms. So there is no data base at the state level that identifies the business portion of sales taxes. Many states have only a vague idea about the portion of state sales tax collections accounted for by business firms. There also appears to be no other source of this kind of data. Undoubtedly that is the reason why sales taxes are sometimes excluded from consideration in business tax cost studies.

Since there is no empirical data whatsoever on total business purchases subject to sales taxation, this study is limited to selected business purchases. Thus, sales taxes are definitely underestimated in this study. It will also become clear as we discuss the selected business purchases subject to sales taxation that some of the estimates in this study are based on rather sketchy information.

Estimating the Sales Tax Costs for the Prototypical Firms

The estimation of the sales tax costs for the prototypical firms requires data on the sales tax rates and the sales tax base. The state and local sales tax rates utilized in this study are detailed in Table S-1. The state sales tax rates are straightforward except in two states, Illinois and Ohio, where there are also significant local sales taxes. In Illinois, one cent (1 percent) is allowed for the coordinated county and municipal sales taxes that

exist in over 90 percent of the localities in the state. One-half cent is allowed in Ohio, although there is greater variation in county sales tax levies in that state.

The implication is that these local sales taxes are added to the state sales tax rate even though firms in specific jurisdictions may not be subject to the tax. Moreover, there is no guarantee that the local sales tax base for business purchases is the same as the state sales tax base or that the administration of the taxes are identical. However, it is beyond the scope of this study to estimate any local variations. So the state and local sales tax base are assumed to be identical in this study.

The selected business purchases or costs utilized in the sales tax calculations and the general tax status of each of these costs in the Great Lakes states are detailed in Table S-2. As indicated in the table, there is considerable variation across the states. Each of the nine selected business purchases are discussed below.

Electricity and Natural Gas Purchases

Electricity and natural gas purchases are subject to sales taxation in Illinois and Wisconsin and to a lesser extent in some of the other states. Data on these purchases, by industry, are available from the 1980 Annual Survey of Manufactures (U.S. Bureau of the Census 1982). Like other parts of this study, it is assumed that the industry average of U.S. usage of electricity and natural gas to the value of shipments for the industry is representative of the prototypical firms. So the ratio of U.S. electricity and natural gas usage to shipments by industry is multiplied by the sales of each of the prototypical firms respectively to obtain the estimates of total electricity and natural gas usage by firm.

In Indiana and Michigan, only energy usage in the production areas of manufacturing firms is exempt, but not in other areas such as offices and warehouses. Actually, the definition of production may be more restrictive in Indiana, but no information is available in either state to determine energy

usage by industry that is subject to the tax. According to the Michigan Department of Treasury, an internal study found that only 2 percent of total electricity and natural gas sales tax receipts originated from the industrial sector in 1977. Given the lack of data, the electricity and natural gas purchases of the prototypical firms in Indiana and Michigan are treated as if they were 100 percent exempt from sales taxes.

Material Costs for the Repair of Buildings and New Construction

Material purchases for the repair of buildings or new construction are subject to sales taxation in all of the Great Lakes states. However, estimation of these material costs must be accomplished separately. Cost of purchases for the repair of buildings is available by industry for U.S. manufacturing in the 1977 Census of Manufactures (U.S. Bureau of the Census, 1981). These purchases include intercompany transfers but exclude extensive repairs or reconstruction which are capitalized as part of new investment.

Since only material costs are actually subject to sales taxation, it is necessary to determine what portion of the purchases for the repair of buildings actually represent materials. A rough approximation of this ratio is available from the 1972 U.S. input-output table (U.S. Bureau of Economic Analysis, February 1979, p. 57). The ratio of material costs to total costs in the maintenance and repair construction sector is about 41.95 percent. If it is assumed that 80 percent of these material costs are pass-throughs to the purchaser of services from this sector, the net result is that about 33.56 percent of purchases for the repair of buildings are material costs.

The estimation of the material costs for new construction is more straightforward. New construction spending can be derived from industry investment data in the 1980 Annual Survey of Manufactures (U.S. Bureau of the Census, 1982). Then, using the 1972 U.S. input-output table once again, it is found that 57.58 percent of total costs in the new construction sector are material costs. So, if 80 percent of these material costs are pass-throughs to the purchasers of new construction, then 46.06 percent of new construction costs by industry are material costs.

It should be obvious that a number of assumptions are either implicit or explicit in the calculation of the material costs for new construction or the repair of buildings. First, as in all parts of this study, it is assumed that the industry data in ratio form is representative for the prototypical firms. Second, the data on which the calculations are based is actually from a number of years--1972, 1977, and 1980. This implies that the various ratios have remained constant throughout these years. Of course, this assumption is probably not true, but there appear to be no better data available and it does provide a benchmark for the prototypical firms. Third, the assumption that 80 percent of material costs are pass-throughs is entirely arbitrary. Fortunately, there is no reason to think that these errors significantly affect the interstate comparisons because the estimates of the material costs are constant across the states for the identically situated firms in this study.

Nonmanufacturing Supplies

Nonmanufacturing supplies are taxable in all of the Great Lakes states, but the estimation of these supplies is based on extremely sketchy information. Nonmanufacturing supplies consist primarily of office supplies but also include janitorial supplies and general safety items, among other miscellaneous supplies. Based on a number of personal conversations with firms, it was determined that a minimum of 1 percent of sales of a firm with a large administrative workforce consists of nonmanufacturing supplies. Of the industries represented in this study, chemicals has the largest administrative payroll in relative terms, so it is used as the basis to estimate nonmanufacturing supplies. Specifically, the ratio of administrative payroll to total payroll in each firm to the administrative payroll to total payroll in chemicals times 1 percent times the sales of each of the prototypical firms provides the estimates of nonmanufacturing supplies. Clearly this procedure is rather arbitrary and probably understates the absolute importance of nonmanufacturing supplies. It implicitly assumes that administrative payrolls are a valid proxy of the relative importance of nonmanufacturing supplies across industries.

Air and Water Pollution Abatement Equipment

Air and water pollution abatement equipment are taxed in only one state in the Great Lakes region, Minnesota. Investment data for these expenditures and total investment by industry in the U.S. are available in the Survey of Current Business (U.S. Bureau of Economic Analysis, June 1982, p. 18). The ratio of air and water pollution abatement spending to total investment spending is multiplied by total investment in each of the prototypical firms to obtain air and water pollution abatement spending for the prototypical firms.

Office Equipment and Fixtures

Office equipment and fixtures spending is based on sketchy information from a sample of annual reports of firms that include such information. When reported, office equipment is listed as a separate asset. It is assumed that the ratio of office equipment to total assets times total investment for each of the prototypical firms provides a representative estimate of new purchases of office equipment for these firms. Since office equipment may be depreciated faster than most other assets, this approach probably understates the importance of office equipment as a proportion of new investment.

Machinery and Equipment Purchases

Total machinery and equipment (M&E) purchases is available from the individual balance sheets for each of the prototypical firms. These data were obtained, by industry, directly from the 1980 Annual Survey of Manufactures (U.S. Bureau of the Census 1982). Total M&E is taxed in only one state, namely, Minnesota. In that state purchases for expansion or new investment are taxed at 4 percent rather than the general rate of 6 percent which would be applied to replacement investment. Since no data are available on replacement investment, the lower rate of 4 percent is applied to total M&E purchases in Minnesota.

Sales taxes on industrial M&E purchases are presently being phased out in Illinois. They are 81.25 percent exempt in 1984 and 100 percent thereafter.

Machinery and equipment purchases in Illinois are assumed to be 100 percent tax exempt in this study to reflect the prospective sales tax costs in that state rather than the accounting sales tax costs.

The M&E sales tax exemption in Indiana is very specific. Only M&E used in direct production is exempt. For example, a spray painting gun and the equipment to hold the gun is exempt but not the booth itself nor the equipment to pull fumes from the booth. In similar fashion, an impact wrench is tax exempt but not the air compressor that drives the impact wrench. Thus, M&E spending must satisfy a "double direct requirement" in Indiana to qualify for exemption from sales taxation. It is assumed that a minimum of one-third of machinery and equipment spending is subject to sales taxation in Indiana, even though the true percentage is probably somewhat higher.

Dollar Values of the Nine Selected Business Purchases

The estimated values of the nine selected business purchases of the prototypical firms subject to sales taxation are presented in Table S-3. The estimated sales tax costs for the prototypical firms are thus the product of the sales tax rate and the appropriate sales tax base. This is not a simple summation since the sales tax base itself varies from state to state. The results of these calculations, the estimated sales tax costs for the nine selected business purchases, are presented in Table S-4. These costs are indexed to Michigan in Table S-5 and shown as a percent of sales in Table S-6.

Before proceeding to a discussion of these results, it is worthwhile to reiterate some of the limitations of the estimates. First, only limited information is available about the categories of goods taxable. So the calculations may appear more exact than they really are. For example, some portion of natural gas and electricity usage in Michigan and Indiana are taxed even though they are treated as 100 percent exempt in this study. Second, the empirical basis for some of selected business purchases subject to sales taxation is based on sketchy information. Still, according to conversations with sales tax administrators, these nine costs are the most significant components of the sales tax base applicable to business firms. In our view it

is far preferable to discuss the general magnitudes and trends in the estimated sales tax costs rather than the specific or absolute estimates.

Results and Conclusions

In general, sales tax costs tend to be much higher in Minnesota, lower in Illinois, Indiana and Wisconsin, and even less in Michigan and Ohio. The relative variation in sales tax costs across the states is the largest of any of the individual taxes examined in this study. However, sales tax costs do not appear to be a large proportion of total firm sales. Even in Minnesota, the highest sales tax cost state, sales taxes as a proportion of total sales do not exceed one-half of 1 percent except in a single case. The overall implication is that sales tax costs usually have a relatively minor impact on the total tax burdens of firms.

Minnesota's high sales tax costs are the result of two factors. First, it shares the highest sales tax rate in the region with Illinois. Second, it appears to have the least number of sales tax exemptions for manufacturing firms. For instance, Minnesota is the only Great Lakes state where machinery and equipment purchases are subject to sales taxation, albeit at the new reduced rate of 4 percent for new or expansion investment.

The burden of the sales tax for Michigan firms appears to be the lowest in the Great Lakes region. That is the result of the interaction of the lowest sales tax rate of any of the Great Lakes states and a number of favorable exemptions from the sales tax base. Obviously the combination of a low tax rate applied to a smaller tax base leads to substantially lower sales tax costs. In fact, Michigan's sales tax costs are at least 35 percent lower than any other state in most of the comparisons for the prototypical firms.

From the standpoint of economic development, Michigan's sales taxes may be an advantage, but it does not appear at this time that sales taxes are always perceived as a business tax cost issue. That is at least partly a reflection of the difficulties in estimating the business portion of sales taxes in the first place. Nonetheless, economic developers may wish to seek ways to more effectively utilize the sales tax issue in their activities.

There appears to be a need to estimate statewide sales tax collections from business firms in Michigan. Currently such a data base does not exist, so we have only crude guesstimates of the statewide business portion of sales tax receipts. These estimates generally range from about 15 percent to 30 percent of total sales tax collections.

Given our current lack of knowledge about the business portion of sales taxes, a careful study of these costs may have significant policy implications. One possibility is that so many purchases of manufacturing firms are exempt already from sales taxation that the state may wish to consider eliminating the sales tax for these firms altogether. That would certainly help make the sales tax issue more visible for economic development purposes, since Michigan would be the only state in the region, and perhaps in the nation, without such a tax on manufacturing firms. On the other hand, such a study could recommend eliminating some of the current exemptions or perhaps raising the sales tax rate. The blunt truth in state business taxation is that the sales tax is a less visible tax, so it may be wise to raise this tax and try to lower a more visible one. Finally, such a study may ferret out important questions about the enforcement of the business portion of sales taxes. It may turn out that the costs of enforcement of business sales tax collections, or some portion thereof, may not be justified. In short, our knowledge of the business portion of sales taxes is so incomplete that it is impossible to consider policy changes without additional facts.

In summary, the prototypical firms in Michigan easily have the lowest sales tax costs in the region. However, sales taxes are only a small proportion of total tax costs, so they have relatively little effect on the interstate comparisons of this study. Furthermore, sales tax costs have historically been very difficult to measure, so they may not always be perceived as a business tax cost issue. A careful study of statewide business sales taxes may show the true burden of the tax, suggest ways to improve the enforcement of the tax, or lead to other policy recommendations.

Table S-1

ESTIMATED STATE AND LOCAL SALES TAX RATES
IN THE GREAT LAKES STATES

State	Rate	Comments
Illinois	6.0%	Includes 1¢ for county and municipal sales taxes. Excludes transit district taxes in three municipalities.
Indiana	5.0%	No local sales taxes.
Michigan	4.0%	No local sales taxes.
Minnesota	6.0%	4% tax rate on machinery and equipment. Excludes 1¢ sales tax in Duluth.
Ohio	5.5%	½¢ estimated for county sales taxes. Approximately one-eighth of counties levy a 1¢ sales tax; five-eighths, ½¢; one-fourth, no tax. Excludes transit district taxes in three municipalities.
Wisconsin	5.0%	No local sales taxes.

Source: Based on data from the sales tax divisions of the individual states.

Table S-2

SALES TAX STATUS OF SELECTED BUSINESS PURCHASES
IN THE GREAT LAKES STATES

Item	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1) Electricity	Taxed	Exempt[1]	Exempt[1]	Exempt[1]	Exempt	Taxed
2) Natural Gas	Taxed	Exempt[1]	Exempt[1]	Exempt[1]	Exempt	Taxed
3) Material Costs-- Repair of Buildings	Taxed	Taxed	Taxed	Taxed	Taxed	Taxed
4) Material Costs-- New Construction	Taxed	Taxed	Taxed	Taxed	Taxed	Taxed
5) Nonmanufacturing Supplies	Taxed	Taxed	Taxed	Taxed	Taxed	Taxed
6) Air Pollution Abatement Equipment	Exempt	Exempt	Exempt	Taxed	Exempt	Exempt
7) Water Pollution Abatement Equipment	Exempt	Exempt	Exempt	Taxed	Exempt	Exempt
8) Office Equipment & Fixtures	Taxed	Taxed	Taxed	Taxed	Taxed	Taxed
9) Machinery & Equipment for Manufacturing	Exempt[2]	Exempt[3]	Exempt	Taxed	Exempt	Exempt

Source: Based on data from the sales tax divisions of the individual states.

1. Exempt only for manufacturing firms.
2. Machinery and equipment 81.25% exempt in 1984 and 100% exempt in 1985. 100% exemption allowed to best reflect the prospective tax conditions.
3. Only machinery and equipment directly used in direct production is exempt. It is assumed that one-third of machinery and equipment does not qualify for this exemption.

Table S-3

ESTIMATED TOTAL VALUE OF SELECTED BUSINESS PURCHASES SUBJECT TO SALES TAXES FOR THE PROTOTYPICAL FIRMS

(in dollars)

Item	Firm/Code							
	1	2	3	4	5	6	7	8
	26	28	37	38	35	73	36	20
1) Electricity	6,257,008	7,279,283	1,942,220	9,181	20,917	9,181	167,925	186,239
2) Natural Gas	4,822,620	5,849,831	611,976	3,710	6,477	3,710	44,312	162,281
3) Material Costs - Repair of Buildings	457,323	588,556	75,111	3,616	4,724	3,616	31,911	50,044
4) Nonmanufacturing Supplies	1,294,353	3,000,000	1,137,497	26,967	50,401	41,630	106,882	221,333
5) Material Costs - New Construction	982,390	1,708,739	884,475	11,123	13,346	0	79,460	69,530
6) Air Pollution Abatement Equipment	506,916	619,852	317,078	1,325	796	0	6,996	7,428
7) Water Pollution Abatement Equipment	506,916	619,852	173,882	1,136	796	0	5,996	16,713
8) Office Equipment & Fixtures	388,222	620,905	205,091	2,166	14,413	56,322	27,192	5,352
9) Machinery & Equipment for Manufacturing	18,009,024	18,836,231	10,271,382	67,585	86,725	83,124	745,716	505,713

Table S-4

ESTIMATED SALES TAX COSTS
FOR THE PROTOTYPICAL FIRMS
(in dollars)

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	852,115	455,965	124,892	968,528	171,726	710,096
2	28	1,142,839	609,533	236,728	1,182,923	325,501	952,366
3	37	291,382	286,127	92,087	578,443	126,620	242,819
4	38	3,406	3,319	1,755	5,483	2,413	2,838
5	35	6,617	5,588	3,315	8,538	4,559	5,514
6	73	6,868	6,462	4,578	10,193	5,586	5,723
7	36	27,461	24,688	9,818	45,335	13,499	22,884
8	20	41,687	25,733	13,850	42,453	19,044	34,739

Table S-5

ESTIMATED SALES TAX COSTS RELATIVE
TO MICHIGAN FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	682	365	100	775	137	569
2	28	483	257	100	500	138	402
3	37	316	311	100	628	138	264
4	38	194	189	100	312	137	162
5	35	200	169	100	258	138	166
6	73	150	141	100	223	122	125
7	36	280	251	100	462	137	233
8	20	301	186	100	307	138	251

Table S-6

ESTIMATED SALES TAX COSTS AS A
PERCENT OF SALES FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	0.28	0.15	0.04	0.32	0.06	0.24
2	28	0.38	0.20	0.08	0.39	0.11	0.32
3	37	0.10	0.10	0.03	0.19	0.04	0.08
4	38	0.14	0.13	0.07	0.22	0.10	0.11
5	35	0.22	0.19	0.11	0.28	0.15	0.18
6	73	0.27	0.26	0.18	0.41	0.22	0.23
7	36	0.14	0.12	0.05	0.23	0.07	0.11
8	20	0.14	0.09	0.05	0.14	0.06	0.12

VII. TOTAL STATE AND LOCAL BUSINESS TAX COSTS

Introduction

Each of the individual business tax costs was examined in earlier sections of this paper. The estimates were gross or full-value in that no adjustments were made for possible property tax abatements or for federal income tax savings through deductions allowed for state and local business taxes. The purpose in this section is to examine the total business tax burdens of the prototypical firms and to consider explicitly property tax abatements and the net changes in the firm's federal income taxes. A more focused analysis of the implications of these tax estimates for Michigan concludes the section.

Before proceeding, it should be emphasized that the gross estimates of the individual business tax costs are valuable. Caveats and limitations notwithstanding, the estimates are reasoned approximations of the "out-of-pocket" costs to the firms. Although the reduction in the federal tax liabilities effectively offsets a portion of the total state and local tax costs, that offset is known with certainty only after the state and local tax costs are incurred. In the interim, if the fortunes of the firm change or the tax laws change, the benefits to the firm may be delayed or eliminated entirely. Second, property tax abatements may be commonplace in the Great Lakes states which allow them, but the estimation of the effects of those abatements is fraught with many difficulties. Thus the separate consideration of abatements should serve to emphasize the tentative nature of these estimates.

It is not inconsequential to question whether it is meaningful to aggregate the individual business tax costs. In this study, workers' compensation costs are underestimated because of the utilization of pure premium in the calculations. Sales tax costs are underestimated because of the utilization of selected business purchases only. Thus, even without any other errors in the estimates, it remains possible for the sum of the tax costs to be biased downwards, although the comparisons of specific taxes may still be valid.

Estimated Total State and Local Business Tax Costs Without Abatements

The estimated total state and local business tax costs without property tax abatements and without any adjustments for federal income tax savings are presented in Table T-1. Those costs are indexed to Michigan in Table T-2 and shown as a percent of sales in Table T-3. Again, these estimates are the simple arithmetic sums of the individual state and local tax costs discussed in the earlier sections of this paper.

In general, total state and local business tax costs appear to be high in Michigan, Minnesota and Ohio, and low in Illinois, Indiana, and Wisconsin. These totals can be as high as 3 percent of sales. The variation in total state and local business tax costs tends to be much less than for any of the individual tax costs, except perhaps for unemployment insurance. For most of the prototypical firms, the total state and local business tax costs vary by less than 100 percent from the lowest state to the highest.

Although Michigan's total state and local business tax costs tend to be higher than average, Michigan is not an outlier in any of the individual comparisons. Michigan appears to be more competitive for the smaller firms and for the highly profitable firms. That is unquestionably the result of more favorable treatment of small firms in the SBT and the low rate of taxation of marginal profits in the SBT versus the profits taxes of other states. However, these results should not be misinterpreted. For profit rates that tend to exist in the U.S., the tax burden of the SBT is probably average when compared to the profits taxes of other states.

Michigan is the highest tax cost state in only one of the comparisons, namely Firm #3, although even here Michigan's costs are within 8 percent of those in two of the other states. Recalling that this hypothetical firm is a large firm in the transportation equipment sector with large losses and much higher than average unemployment, it is clear that the higher relative costs for Firm #3 are caused primarily by two features of the Michigan tax system. First, the Michigan SBT is a broad based value added tax, so a significant tax liability remains even when a firm is experiencing losses, unless it qualifies

for the small business credit. Second, the Michigan UI system is more steeply experienced rated than elsewhere, so a bad unemployment record raises UI costs relative to the other Great Lakes states.

It should be emphasized that the results for Firm #3 do not mean that Michigan is inhospitable to the transportation equipment sector, the state's largest industry. What they do mean, however, is that any large firm with large losses and a bad unemployment record may pay higher taxes in Michigan than in the other Great Lakes states until it returns to a period of profitability when its relative tax position will improve.

Property Tax Abatements

Property tax abatements are an industrial tax incentive designed to spur new investment and thereby enhance regional economic development. In their simplest form, all or a portion of new investment by the firm is exempted from property taxes for a given period of time. Generally, authority to grant property tax abatements rests with local government authorities.

The general provisions of the property tax abatement laws in the Great Lakes states are presented in Table T-4. Only Minnesota and Wisconsin have not had such laws. Michigan's industrial property tax abatement program is the oldest in the region. It was initiated in 1974 under Public Law 198. Abatements in Michigan are allowed for 100 percent of rehabilitation costs or 50 percent for expansion or new plant construction costs for up to 12 years. Through 1983 about 84 percent of the cumulative abatement awards in Michigan were for new facilities rather than rehabilitation. So the bulk of property tax abatements in Michigan have been for 50 percent over 12 years.

The provisions of the property tax abatement laws in the other three states vary somewhat from that of Michigan. Illinois, the most recent Great Lakes state to adopt such a law, allows a maximum abatement of 100 percent for real property up to 10 years. Ohio also allows up to 100 percent abatements for real property but offers 15 years for the maximum duration of the award. Indiana's property tax abatement law, which had been restricted to urban

redevelopment areas within cities until recently, is unique in that the percentage of taxes abated declines over the period of the abatement. Indiana also limits the length of abatements for tangible personal property, essentially machinery and equipment investment, to five years, while real property is eligible for abatement up to ten years.

It does not appear that Michigan's property tax abatement law is more generous than the other Great Lakes states. Michigan is one of only two states in the region to grant property tax abatements for machinery and equipment investment, and the other state, Indiana, limits that abatement to five years. But it should also be remembered that Illinois does not tax machinery and equipment, and Ohio offers a significant credit for personal property taxes paid in conjunction with the corporate income tax. Furthermore, in most cases Michigan offers the lowest percentage abatement of the four Great Lakes states with such laws. Thus, Michigan may be no better than average in terms of the provisions of its property tax abatement law.

If this descriptive analysis is correct, property tax abatements may lower the absolute level of business taxes and decrease the variation in the business tax burden across the states with relatively minor changes in the positions of the states. Minnesota will surely remain the highest business tax cost state since it does not have a property tax abatement law, and Wisconsin's business tax costs are low enough that it will remain a low business tax cost state even without abatements. That does not deny the possibility that the relative positions of the states will change when looking at property taxes alone. Recall that Michigan has the highest property taxes in the region without abatements. So it is possible that consideration of abatements may improve its relative position for property taxes alone, especially since Michigan has the most generous awards in the region for machinery and equipment.

Are Property Tax Abatements Temporary Tax Incentives?

There is the knotty question of whether abatements, which after all are only temporary tax incentives, should be considered in a study of firms which represent ongoing, permanent operations. The surprising answer to this

question is that abatements may not be that temporary. By 1978, just four years after inception of Michigan's property tax abatement program, new industrial property tax abatement awards in the state amounted to almost one-half of total investment by the manufacturing sector.[1] Furthermore, it is not uncommon for firms in Michigan to return for new property tax abatements before the old abatement expires. Of course, if the new property tax abatement is granted, the old one is cancelled. But theoretically it is possible to continue property tax abatements indefinitely if machinery and equipment is replaced within 12 years, the maximum length of the abatement.

Surprising as it may seem, the conventional wisdom in Michigan is that not much industrial investment occurs in the state without property tax abatements. In fact, according to economic developers, abatements are readily available in all four of these states. So it appears one cannot simply assume away abatements by saying they are temporary inducements to firms.

Estimating the Effects of Property Tax Abatements

There are many difficulties in estimating the specific impact of property tax abatements on a firm's business tax costs. At best the approach used in this study is but a rough approximation of one of many scenarios. First, it is assumed that the prototypical firms pursue property tax abatements aggressively in all states which have such a law and that the local jurisdictions within the states will grant their requests. That is consistent with this study's notion of identically situated firms and with the discussion of the previous section.

Second, U.S. capital stock estimates are used as the basis to establish the average age of machinery and equipment and structures. According to the U.S. Bureau of Economic Analysis (March 1982, pp. 116-117), the average age of machinery and equipment on a historical cost basis is 5.33 years, 10.58 years

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[1] The data on property tax abatement awards are from Wolkoff (1982), while the data on investment is from the 1978 Annual Survey of Manufactures (U.S. Bureau of the Census, 1981).

for structures. Thus, given a steady stream of real investment, it is not unreasonable to expect replacement of all machinery and equipment in about 9 years, 19 years for structures.

Given these assumptions and the provisions of the property tax abatement laws in each state, the long run effects of property tax abatements can be determined. Specifically, property tax abatements are generally granted for 50 percent of the value of the investment for up to 12 years in Michigan, so all of machinery and equipment will likely be eligible since the average life of this equipment is about nine years.[2] That effectively reduces the full-value property tax cost estimates of the prototypical firms by 50 percent in Michigan. In similar fashion, structures on average outlive the 12-year abatement period by seven years, so it is theoretically possible for twelve-nineteenths or 63.16 percent of structures to be eligible for abatement. That reduces the property tax costs for structures by 31.58 percent in Michigan, which was obtained as the abatement percentage of 50 percent times the percentage of structures eligible for abatement.

This same method is repeated for the other three states that grant property tax abatements. In Illinois, ten-nineteenths or 52.63 percent of structures will be eligible for abatement at an abatement percentage of 100 percent; the abatement percentage is the same in Ohio, but fifteen-nineteenths or 78.94 percent of structures will be eligible for abatement in accordance with Ohio's law. The situation in Indiana is more complicated because the abatement percentage itself declines over the period of the award. However, given a steady stream of real investment, the abatement percentage for machinery and equipment will average 78 percent over the five years of the abatement, 49.5 percent for structures over 10 years. Thus, five-ninths or 55.55 percent of machinery and equipment will be eligible for abatement at an average percentage rate of abatement of 78 percent, and ten-nineteenths or 52.63 percent of

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[2] Strictly speaking, of course, this depends on the distribution of the lifetimes of machinery and equipment. But, lacking data on this distribution, all machinery and equipment is evaluated at its average lifetime.

structures will be protected by abatements at an average abatement rate of 49.5 percent.

There are many limitations of this method of accounting for property tax abatements for the prototypical firms. Among others, local jurisdictions may not be willing to continue to grant abatements, and the assumed lifetimes for machinery and equipment may vary. Most important, however, these estimates represent the maximum amount of the firm's property assets that will eventually be protected by property tax abatements in the long run given a steady stream of real investment. That is consistent with the prospective cost approach of this study and with using industry averages to construct the prototypical firms, but it represents only one of an unlimited number of possibilities. Consideration of these other possibilities may lead to different conclusions about the effects of property tax abatements.

Our method of determining the effects of property tax abatements may differ substantially from the current costs of those abatements to state and local governments. For instance, Illinois is a late comer to property tax abatements since the law was effective only in 1982, while Michigan's property tax abatement law is the oldest in the region. Thus there is no doubt that Michigan has granted many more property tax abatements than Illinois. Our approach, however, was to consider the long-run ramifications of property tax abatements, i.e. where the tax structure is heading, rather than attempting to estimate the historic cost of abatements.

Results and Conclusions

The effects of property tax abatements on the prototypical firms are presented in two sets of tables. The first set presents the property tax costs with abatements to facilitate comparison to the earlier full-value estimates of property taxes. The absolute levels of the property tax costs with abatements can be found in Table T-5, indexed to Michigan in Table T-6, and shown as a percent of sales in Table T-7. The second set of tables restates the total state and local business tax costs, including the effects of property tax abatements. They can be found in Tables T-8, T-9, and T-10 respectively.

There is no doubt that property tax abatements affect the relative property tax burdens across the Great Lakes states. This is especially true, of course, for Minnesota and Wisconsin which do not grant property tax abatements. Minnesota replaces Michigan as the highest property tax cost state, while Wisconsin is replaced by Illinois as the lowest property tax cost state. Michigan's property taxes appear more competitive with the other states when property tax abatements are added to the analysis. Besides being replaced by Minnesota as the highest property tax cost state, Michigan's and Ohio's property tax burdens now appear similar. Furthermore, in slightly less than one-half of the comparisons, the total property tax burdens in Michigan approach to within about 20 percent of the three states which tend to have lower property taxes, namely, Illinois, Indiana, and Wisconsin.

As expected, the variance in the overall or total business tax costs is reduced by adjusting for property tax abatements but with few changes in the relative positions of the states. Minnesota becomes firmly entrenched as the highest tax cost state for all of the prototypical firms. But the total variation from the low tax state to the high tax state, excluding Minnesota, is now much less than that found without abatements.

Since these estimates are for firms with permanent, on-going operations where abatements are sought aggressively over a long period of time, important questions remain about the effects of abatements in the short run. In particular, is Michigan's situation better than indicated here for a new or relocating firm? Although the details are not presented in this paper, the answer is no. For the first five years of any abatement, Michigan's relative position is actually worse than indicated in this study. The reason is that abatements may be granted for 100 percent of eligible property in Illinois and Ohio and a sliding scale beginning at 100 percent in Indiana versus Michigan's 50 percent. After that, Michigan's relative position begins to improve, depending on the assumptions made about the replacement of capital equipment and the willingness of local jurisdictions to grant new abatements. However, we do not see any reason to think that Michigan's relative position is improved vis-a-vis abatements by restricting the comparison to a new or relocating firm or even a shorter time horizon.

There are serious questions about whether property tax abatements actually increase investment or merely subsidize spending which would have occurred anyway.[3] Local jurisdictions are also legitimately concerned about the potential erosion of the property tax base which is the primary source of revenue for primary and secondary education. However, Michigan's property tax costs are above the regional average. So it remains unlikely that policymakers will eliminate this tax incentive in the near term.

Federal Tax Deductibility

State and local tax costs are deductible from income on federal tax returns. Since the highest marginal tax rate in the federal tax system is 46 percent (profits over $100,000), that effectively transfers almost one-half of state and local tax costs for many firms to the federal tax base. In other words, for every dollar that state and local taxes are higher in one state than another, the federal tax bill falls by as much as 46 cents.

The effects of the federal tax deductibility of state and local taxes are shown in two ways in this study. First, the combined total of federal, state and local taxes for the prototypical firms is determined. Recall that the prototypical firms are identically situated, so the federal tax liabilities were originally the same across the states. Since the federal tax base absorbs up to one-half of state and local tax costs, combining federal taxes with state and local taxes gives a true picture of the differences among the states in the total tax burden that arises solely because of the differences in states and local tax costs estimated in this study. The net effect of federal tax deductibility is to greatly diminish the variability in total tax costs.

The second approach to account for federal tax deductibility is to relate the total state and local tax costs net of the federal tax deductions to the sales of each of the prototypical firms. It should be clearly understood that

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[3] John Due (1961, p. 171) was one of the earliest researchers to doubt the effectiveness of tax incentives as a tool for regional economic development. For more recent analyses, see Advisory Commission on Intergovernmental Relations (March 1981) and Wolkoff (1982).

this approach does not reflect the gross or "out-of-pocket" costs of state and local taxes but rather the net costs to the firm of state and local taxes after deductions for federal taxes. These estimates are related to sales in order to isolate the true effects of state and local taxes alone and thereby assess directly the relative magnitude or importance of state and local tax costs. The differences between any two states in the percents shown in the table times the sales of that firm (divided by 100) indicate the net tax savings or loss that would be incurred by a firm moving from one of the states to the other (or selecting one state over the other in choosing a location).

It can be argued that our approach of accounting for the federal tax deductibility of state and local tax costs is artificial since the estimated differences in total state and local tax costs indicate that the prototypical firms never would have had identical federal tax bills in the first place. That would imply the need for a simultaneous solution to the problem. Although true, we think the method used here is consistent with the prototypical firm methodology of this study. We account for the first round feedback effects of deducting state and local taxes from federal income, by far the most important of the feedback effects.

The total federal, state and local tax costs for the prototypical firms are presented in Table T-11, indexed to Michigan in Table T-12, and shown as a percent of sales in Table T-13. Finally, state and local tax costs net of the allowable federal tax deductions are presented in Table T-14. Assuming that firms will aggressively seek abatements and that local jurisdictions will continue to grant abatements, and noting once again all of the other caveats and limitations of this study, the estimates in this set of tables are perhaps the most representative of the overall state and local tax conditions in the Great Lakes region.

In general, total federal, state and local taxes are much higher in Minnesota, lower in Michigan, Ohio, and perhaps Wisconsin, and lower still in Illinois and Indiana. The total federal, state and local tax costs usually ranged from about 2 to 4 percent of sales, or 1 to 2 percent of sales for state and local tax costs net of federal tax deductions. As expected, federal

deductibility dilutes the differences across the states.[4] For most of the prototypical firms the variation in total federal, state and local tax costs from the low to the high tax cost state is less than 50 percent. Some of this reduction is due to the much higher base that results when federal taxes are combined with state and local taxes, but much of it is also a result of the high rate of marginal taxation in the federal system that reduces the absolute state and local tax cost differentials by about one-half.

Michigan is not the highest tax cost state in any of the comparisons. For the profitable firms, the total tax burdens in Michigan range from about 10 percent below those in the highest tax cost state to about 15 percent above those in the lowest tax cost state. In many situations it appears that Michigan is neither a high tax cost state nor a low tax cost state. This is illustrated clearly in Table T-14 which shows the state and local tax costs net of federal taxes as a percent of the sales of the firm. Except for Firm #3, the large firm with large losses, the potential tax savings for a firm leaving Michigan and going to any of the other Great Lakes states is roughly one-half of 1 percent of sales or less, frequently much less. By this reckoning at least, Michigan's state and local tax costs may be above average but not dramatically so.

Before proceeding, it should be mentioned that there are no federal tax offsets for firms with losses, although these firms would have larger loss carryforwards. Thus the effective tax burdens of firms with losses, or perhaps very low profits, are due entirely to state and local taxes. For this reason, Firms #3, #5, and #6 have some of the highest state and local tax costs net of federal taxes. It also means that if the marginal tax rates in the federal tax system are reduced as proposed recently by the U.S. Treasury, more of the differences in the tax burdens will be borne by the states, i.e., state tax differentials will become relatively more important to firms. This possibility should not be overlooked by state policymakers.

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4 Of course, the inclusion of federal taxes does not change any of the relative positions of the states.

Focus on Michigan

There are at least two ways to squarely focus the results of this study on Michigan's situation. The first is to look at the taxes in terms of their relative importance in Michigan, which will suggest where the greatest potential lies for changing those tax burdens through deliberate policy actions. All other things equal, it should be obvious that a 1 percent change in tax costs will have a greater effect the more important that tax is as a portion of total tax costs. However, it should also be noted that Michigan loses the most revenue from reducing tax costs on a relatively more important tax.

The importance of the individual business tax costs in Michigan relative to the total state and local tax costs for each of the prototypical firms in the state is presented in Table T-15. One surprising feature of this table is how much the relative tax burdens vary across the firms. Besides the complexity of the tax statutes, firms obviously differ in terms of their financial and operating characteristics. The implication is that a single policy action may have far different effects across firms.

Perhaps the most significant finding from Table T-15 is that the payroll taxes are about as important in Michigan as the nonpayroll taxes. This is significant because earlier studies frequently limited their analysis of state and local tax burdens to corporate income taxes, property taxes and occasionally sales taxes. The justification for ignoring the payroll taxes usually amounted to appeals that they were unimportant, they were difficult to measure, or they were not taxes at all since the revenues do not support the general operations of government.

Given the results of this study, it appears difficult to defend the notion that payroll taxes are unimportant today. Although it is a separate question whether the payroll taxes should be considered as taxes in the same way as nonpayroll taxes, the position of this study throughout has been that since their initial impact falls on business firms, they are a legitimate cost of doing business which is at least partly influenced by state and local government.

The most important of the nonpayroll taxes in Michigan is the property tax, even with abatements. Thus property taxes remain a significant component of total state and local tax costs for firms. The second most important of the nonpayroll taxes in Michigan is the SBT. Given the attention which is usually devoted to the SBT, it is somewhat surprising to find that this tax can be less important than property taxes, workers' compensation, or unemployment insurance. It should be noted, however, that there is a wide variation in the relative importance of the SBT across the prototypical firms. Finally, the least important of the individual business taxes is the sales tax, which is only about 5 percent of total state and local tax costs in Michigan.

The second way to gain a better perspective on the results of our study is to restate them in terms of regional averages. Up to this point in the study, all of the index numbers have been stated relative to the level of that tax in Michigan, whereas now the total liability for each tax in Michigan is related to the Great Lakes average for that tax. This approach helps to assess the extent to which Michigan is currently above or below the regional average for each tax. Doug Ross, Director of the Michigan Department of Commerce, has suggested in a recent report, The Path to Prosperity (p. 96), that the state should move closer to the regional averages. These estimates provide at least a rough measure of the actions necessary to achieve that goal.

The importance of the individual business taxes in Michigan relative to their average importance in the Great Lakes region is presented in Table T-16. The total state and local tax costs as well as the combined federal, state and local tax costs are also presented to provide the summary results of the study. Remember that the effect of federal tax deductibility of state and local taxes is to reduce the variation in state and local tax costs because the federal tax structure absorbs up to one-half of those costs.

What becomes clear from examining Table T-16 is that for most firms, payroll taxes are above the regional average in Michigan. Since unemployment insurance costs are near the regional average, the bulk of this differential is due to higher costs for workers' compensation. It is not unusual for workers' compensation costs to be at least 30 percent more important in Michigan than they are in the region on average.

Michigan appears to be more favorably situated in regard to nonpayroll taxes than payroll taxes. Although there is considerable variation in the estimates, it is not stretching the comparisons too far to say that for nonpayroll taxes, Michigan approaches the regional average. In fact, for two of the smaller firms and one of the large firms, these taxes are actually lower in Michigan than in the region as a whole. It appears that except for workers' compensation, Michigan's greatest departure from the regional average is the way in which it taxes firms with losses that do not qualify for the small business credit on the SBT. Specifically, the nonpayroll taxes of this firm in Michigan are 31 percent higher than the regional average.

As stated earlier, it is more difficult to compare the individual nonpayroll taxes because of the substitution possibilities between the taxes in supporting the operations of state and local government and the existence of special credits and exemptions among the taxes. Nonetheless, it is surprising how high Michigan's property tax costs with abatements are as compared with the regional average. The property tax cost differentials with abatements range from 6 to 30 percent above the regional average for the prototypical firms. Although the margin of error in the property tax cost estimates of this study is probably the greatest of any of the individual tax costs, it remains likely that property tax costs for Michigan firms are higher than the regional average.

Finally, the tax with the smallest range across the firms is the business portion of sales taxes. The burden of sales taxes in Michigan tends to be about one-half of the average for the region. But sales tax is also relatively less important as a proportion of total taxes, so it has little impact on overall tax costs.

Without considering federal taxes, total state and local tax costs in Michigan (see next to last row of Table T-16) range from just below the regional average to about 25 percent above the regional average. As explained earlier, the effect of federal deductibility of state and local taxes is to reduce the range or differential between the states that results from the state and local tax burdens. From this perspective, seven of the eight prototypical

firms in Michigan range from just below the regional average to about 10 percent above the regional average. The lone exception occurs for a large firm with large losses which, of course, gains nothing currently from the federal deductibility of state and local taxes. The tax burdens of the three smaller firms in this study are all virtually identical to the regional average.

In sum, Michigan's state and local business tax costs for the prototypical firms are average to above average relative to the other Great Lakes states but not wildly out of line with any of its neighbors. State and local tax costs net of federal tax deductions generally ranged from about 1 to 2 percent of sales (Table T-14). Except for Firm #3, the potential tax saving for a firm leaving Michigan and going to any of the other Great Lakes states is roughly one-half of 1 percent of sales or less, frequently much less. Somewhat surprisingly, we found the payroll taxes for workers' compensation and unemployment insurance to be as high as one-half of the total state and local tax costs. Michigan's business tax costs are above the regional average for workers' compensation and property taxes and significantly below the regional average for the business portion of sales taxes.

Table T-1

ESTIMATED TOTAL STATE AND LOCAL
BUSINESS TAX COSTS WITHOUT ABATEMENTS
(in dollars)

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	7,000,772	5,649,668	9,524,763	9,936,724	8,721,991	5,254,128
2	28	5,778,658	5,002,986	6,552,553	7,402,262	5,720,084	4,172,878
3	37	5,144,566	4,446,560	8,879,352	8,266,909	8,391,690	4,904,538
4	38	57,048	47,587	65,430	78,422	62,740	60,743
5	35	47,409	49,499	63,095	70,503	69,217	43,622
6	73	44,148	42,418	54,795	58,616	49,949	49,307
7	36	375,951	346,622	625,932	652,280	466,431	343,954
8	20	406,816	354,187	606,587	635,874	419,593	400,788

Table T-2

ESTIMATED TOTAL STATE AND LOCAL BUSINESS TAX COSTS
WITHOUT ABATEMENTS RELATIVE TO MICHIGAN

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	74	59	100	104	92	55
2	28	88	76	100	113	87	64
3	37	58	50	100	93	95	55
4	38	87	73	100	120	96	93
5	35	75	78	100	112	110	69
6	73	81	77	100	107	91	90
7	36	60	55	100	104	75	55
8	20	67	58	100	105	69	66

Table T-3

ESTIMATED TOTAL STATE AND LOCAL

BUSINESS TAX COSTS WITHOUT ABATEMENTS AS A PERCENT OF SALES

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	2.33	1.88	3.17	3.31	2.91	1.75
2	28	1.93	1.67	2.18	2.47	1.91	1.39
3	37	1.71	1.48	2.96	2.76	2.80	1.63
4	38	2.28	1.90	2.62	3.14	2.51	2.43
5	35	1.58	1.65	2.10	2.35	2.31	1.45
6	73	1.77	1.70	2.19	2.34	2.00	1.97
7	36	1.88	1.73	3.13	3.26	2.33	1.72
8	20	1.36	1.18	2.02	2.12	1.40	1.33

Table T-4

GENERAL PROVISIONS OF PROPERTY TAX ABATEMENT LAWS

FOR INDUSTRIAL FIRMS IN THE GREAT LAKES STATES

State	Abatement Terms as a Percentage of Value of Improvements	Comments
Illinois	100% up to 10 years but not to exceed $1 million in abated taxes.	New or expanded real property. Illinois does not tax personal property.
Indiana	100% - year 1 95% - year 2 80% - year 3 . . 5% - year 10	Real and personal property but personal property eligible for 5 years only. Local counties designate economic revitalization areas.
Michigan	100% up to 12 years for rehabilitation; 50% for expansion or new plant construction.	New or expanded real and personal property within locally designated industrial development districts.
Minnesota	None	
Ohio	100% up to 12 years for rehabilitation; 15 years for expansion or new plant construction.	New or expanded real property within locally designated community reinvestment areas. More generous provisions for investment in urban enterprise zones.
Wisconsin	None	

Sources: Individual state offices of economic development and property tax divisions, and Directory of Incentives for Business Investment and Development in the United States, National Association of State Development Agencies, National Council for Urban Economic Development, and the Urban Institute, 1983, various pages.

Table T-5

ESTIMATED PROPERTY TAX COSTS WITH ABATEMENTS

FOR THE PROTOTYPICAL FIRMS

(In Dollars)

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	954,763	1,655,905	2,458,430	2,918,657	2,134,277	1,527,437
2	28	737,887	1,511,017	2,023,028	2,418,170	1,987,139	1,265,589
3	37	560,978	1,495,887	1,566,832	1,830,188	1,932,281	957,964
4	38	5,462	8,901	10,388	13,881	9,679	7,696
5	35	7,904	19,407	19,046	25,658	22,250	13,858
6	73	5,857	8,252	13,481	17,971	8,570	17,157
7	36	35,214	98,145	94,212	114,457	119,919	60,306
8	20	33,297	71,015	95,454	101,123	85,852	53,340

Table T-6

ESTIMATED PROPERTY TAX COSTS WITH ABATEMENTS RELATIVE TO MICHIGAN FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	39	67	100	119	87	62
2	28	36	75	100	120	98	63
3	37	36	95	100	117	123	61
4	38	53	86	100	134	93	74
5	35	41	102	100	135	117	73
6	73	43	61	100	133	64	127
7	36	37	104	100	121	127	64
8	20	35	74	100	106	90	56

Table T-7

ESTIMATED PROPERTY TAX COSTS WITH ABATEMENTS AS A PERCENT OF SALES FOR THE PROTOTYPICAL FIRMS

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	0.32	0.55	0.82	0.97	0.71	0.51
2	28	0.25	0.50	0.68	0.81	0.66	0.42
3	37	0.19	0.50	0.52	0.61	0.64	0.32
4	38	0.22	0.36	0.42	0.56	0.39	0.31
5	35	0.26	0.65	0.63	0.86	0.74	0.46
6	73	0.23	0.33	0.54	0.72	0.34	0.69
7	36	0.18	0.49	0.47	0.57	0.60	0.30
8	20	0.11	0.24	0.32	0.34	0.29	0.18

Table T-8

ESTIMATED TOTAL STATE AND LOCAL BUSINESS
TAX COSTS WITH ABATEMENTS

(In Dollars)

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	6,219,984	4,974,660	7,960,254	9,936,724	8,086,442	5,254,128
2	28	5,078,520	4,419,914	5,198,731	7,402,262	5,150,182	4,172,878
3	37	4,617,057	3,990,517	7,718,715	8,266,909	7,962,306	4,904,538
4	38	53,765	45,459	60,420	78,422	60,067	60,743
5	35	39,567	44,420	51,140	70,503	62,834	43,622
6	73	38,829	38,971	46,680	58,616	45,619	49,307
7	36	342,642	319,858	563,679	652,280	439,318	343,954
8	20	379,505	326,244	542,290	635,874	397,363	400,788

Table T-9

ESTIMATED TOTAL STATE AND LOCAL BUSINESS TAX COSTS

WITH ABATEMENTS RELATIVE TO MICHIGAN

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	78	62	100	125	102	66
2	28	98	85	100	142	99	80
3	37	60	52	100	107	103	64
4	38	89	75	100	130	99	101
5	35	77	87	100	138	123	85
6	73	83	83	100	126	98	106
7	36	61	57	100	116	78	61
8	20	70	60	100	117	73	74

Table T-10

ESTIMATED TOTAL STATE AND LOCAL BUSINESS TAX COSTS

WITH ABATEMENTS AS A PERCENT OF SALES

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	2.07	1.66	2.65	3.31	2.70	1.75
2	28	1.69	1.47	1.73	2.47	1.72	1.39
3	37	1.54	1.33	2.57	2.76	2.65	1.63
4	38	2.15	1.82	2.42	3.14	2.40	2.43
5	35	1.32	1.48	1.70	2.35	2.09	1.45
6	73	1.55	1.56	1.87	2.34	1.82	1.97
7	36	1.71	1.60	2.82	3.26	2.20	1.72
8	20	1.27	1.09	1.81	2.12	1.32	1.35

Table T-11

ESTIMATED TOTAL FEDERAL, STATE AND LOCAL
BUSINESS TAX COSTS WITH ABATEMENTS
(in dollars)

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin	Average
1	26	10,249,890	9,577,415	11,189,636	12,256,930	11,257,778	9,728,328	10,709,996
2	28	36,797,261	36,441,614	36,862,175	38,052,082	36,835,958	36,308,214	36,882,884
3	37	4,617,057	3,990,517	7,718,715	8,266,909	7,962,306	4,904,538	6,243,340
4	38	53,765	45,807	60,420	78,422	60,067	60,743	59,871
5	35	39,567	44,420	51,140	70,503	62,834	43,622	52,014
6	73	38,829	38,971	46,680	58,616	45,619	49,307	46,337
7	36	580,399	568,095	699,759	747,613	632,604	581,107	634,929
8	20	645,696	616,935	733,600	784,135	655,339	657,189	682,149

Table T-12

ESTIMATED TOTAL FEDERAL, STATE AND LOCAL
BUSINESS TAX COSTS WITH ABATEMENTS RELATIVE TO MICHIGAN

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	92	86	100	110	101	87
2	28	100	99	100	103	100	98
3	37	60	52	100	107	103	64
4	38	89	76	100	130	99	101
5	35	77	87	100	138	123	85
6	73	83	83	100	126	98	106
7	36	83	81	100	107	90	83
8	20	88	84	100	107	89	90

Table T-13

ESTIMATED TOTAL FEDERAL, STATE AND LOCAL
TAX COSTS WITH ABATEMENTS AS A PERCENT OF SALES

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	3.42	3.19	3.73	4.09	3.75	3.24
2	28	4.09	4.05	4.10	4.23	4.09	4.03
3	37	1.54	1.33	2.57	2.76	2.65	1.63
4	38	2.15	1.83	2.42	3.14	2.40	2.43
5	35	1.32	1.48	1.70	2.35	2.09	1.45
6	73	1.55	1.56	1.87	2.34	1.82	1.97
7	36	2.90	2.84	3.50	3.74	3.16	2.91
8	20	2.15	2.06	2.45	2.61	2.18	2.19

Table T-14

ESTIMATED TOTAL STATE AND LOCAL TAX COSTS
NET OF FEDERAL TAX DEDUCTIONS AS A PERCENT OF SALES

Firm	SIC Code	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin
1	26	1.12	0.90	1.43	1.79	1.46	0.95
2	28	0.91	0.80	0.94	1.33	0.93	0.75
3	37	1.54	1.33	2.57	2.76	2.65	1.63
4	38	1.73	1.41	2.00	2.72	1.98	2.01
5	35	1.32	1.48	1.70	2.35	2.09	1.45
6	73	1.55	1.56	1.87	2.34	1.82	1.97
7	36	0.93	0.86	1.52	1.76	1.19	0.93
8	20	0.68	0.59	0.98	1.14	0.72	0.72

Table T-15

RELATIVE IMPORTANCE OF THE INDIVIDUAL
STATE AND LOCAL BUSINESS TAX COSTS WITHIN MICHIGAN
(percent)

Tax	Firm	1	2	3	4	5	6	7	8
	SIC Code	26	28	37	38	35	73	36	20
Payroll		44.5	37.3	66.7	73.0	54.4	53.7	51.7	57.0
Workers' Compensation		31.2	26.0	38.4	25.7	25.3	5.6	29.3	24.6
Unemployment Insurance		13.3	11.3	28.4	47.4	29.1	48.2	22.4	32.5
Nonpayroll		55.5	62.7	33.2	26.9	45.6	46.2	48.2	43.0
Single Business		23.0	19.2	11.8	6.8	1.9	7.6	29.8	22.8
Property with Abatements		30.9	38.9	20.3	17.2	37.2	28.9	16.7	17.6
Sales		1.6	4.5	1.2	2.9	6.5	9.8	1.7	2.5
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Totals and subtotals may not add precisely due to rounding.

Table T-16

INDIVIDUAL STATE AND LOCAL BUSINESS TAX COSTS

IN MICHIGAN RELATIVE TO THE GREAT LAKES AVERAGE FOR EACH TAX

Tax	Firm	1	2	3	4	5	6	7	8
Payroll		119	125	120	110	108	99	139	134
Workers' Compensation		132	137	124	153	128	129	210	167
Unemployment Insurance		96	104	115	96	96	97	96	116
Nonpayroll		108	89	131	82	88	103	116	108
Single Business		115	78	299	57	37	136	137	110
Property with Abatements		127	122	113	111	106	113	108	130
Sales		23	32	34	55	58	70	41	47
Total State and Local		113	99	124	101	98	101	127	121
Total Federal, State and Local		104	100	124	101	98	101	110	108

Note: The index numbers in this table reflect the extent to which the specific tax for each firm is higher or lower than the Great Lakes average for that tax and firm. For example, the first entry for Firm 1 indicates that payroll taxes are 19 percent higher for this firm in Michigan than the Great Lakes average for payroll taxes for that firm.

VIII. CONCLUSIONS

In this study, state and local tax costs were estimated as objectively as possible for eight hypothetical firms in the six Great Lakes states. The firms were assumed to be identically situated in each state in order to isolate the influence of state controlled costs of doing business. The empirical data for the study were industry averages from 1980 for the most part, although the data were used only in the form of ratios to construct the financial statements for the firms. More important, wages were estimated for 1983 by industry, and the tax rates and tax structures were those in effect through about mid-1984 and scheduled to be effective by 1985. Given this approach, we think that the results of this study reflect current tax rates and tax structures in the Great Lakes region reasonably well.

The results of this study show much less variation in total state and local business tax costs than some earlier research had indicated. The differences are due to our inclusion of more taxes, fuller consideration of the structural details of those taxes, the use of identically situated firms, and other factors. The differences may also be caused in part by the method of this study described briefly above in which prospective tax costs were estimated, rather than (1) determining accounting tax costs in a given year or (2) deciphering the data on historical tax receipts from all business firms.

Perhaps the most plausible explanation of the decreased variability in the findings of this study, however, is that the Great Lakes states with state and local tax burdens higher than the regional average have indeed moved to eliminate those differences in response to adverse economic conditions. It is certainly no secret that the Great Lakes region has been slower growing than the nation as a whole in recent years. Yet we have repeatedly expressed our skepticism that lowering business taxes will engender more economic growth. It has long been recognized that state and local taxes are at best a secondary factor in business location decisions, nor does it seem that the historic economic data support the contention that low business taxes alone have spurred economic development. If lowering taxes eliminates needed public services or causes our roads and schools to deteriorate, it may cost more jobs than it

creates. Regional economic growth remains a complex phenomenon that continues to defy simple explanations.

We have become very sensitized to the problems of calculating state and local business tax costs for hypothetical firms. The empirical data offered a rich source of information for the study, but many assumptions were required along the way. It is also true that the statutes which govern state and local taxes are very complex, which added to the difficulties of the research. We have tried to be open about the methods and assumptions used in the study to encourage criticism that will improve future research.

It has been suggested that a reasonable goal of public policy in Michigan is that state and local taxes for business firms should at least approach the regional averages. Obviously, this will not be a panacea for Michigan's problems, and the goal itself may turn out to be a moving target which is impossible to hit if all states lower their business tax costs anytime they are above the average. But it is at least possible that taxes may be more significant in a slow growth environment than in a rapidly expanding one. Given that Michigan is still shedding its image as an anti-business, high-cost state, it is difficult to quibble with a policy goal whose aim is to ensure that Michigan is not an outlier in business tax costs.

From this point of view, the overall results of this study are promising in that the state is certainly within reach of the regional average for state and local business tax costs. In fact, the tax burdens for the three small firms in Michigan were all virtually identical to the Great Lakes averages for those firms. The same is true for one of the large firms. So four of the eight hypothetical firms in Michigan are already at the regional averages.

The problem areas in the Michigan business tax structure appear to be workers' compensation and property taxes. Workers' compensation costs in Michigan have already received considerable attention from the Michigan legislature. The major reforms adopted in 1982 included many changes in the statutes designed to lower costs and the abandonment of the cartel pricing system in favor of open competition in the market for workers' compensation

insurance. These reforms have in fact reduced the costs of workers' compensation insurance for many firms, sometimes dramatically. The current trends are also encouraging in that the number of claims has fallen significantly. However, the state remains at least 30 percent higher than the regional average for workers' compensation costs despite narrowing the gap in recent years.

We think it is very difficult to fairly assess a workers' compensation system that is undergoing such a significant transition, both in the statutes that govern the system and in the marketplace where coverage is bought and sold. It will be at least a few more years before the total impact of these changes is known and perhaps even longer before the reforms have been subjected to litigation and review by the courts. In fact, the Michigan legislature must still settle the question of the definition of disability because the new definition adopted in 1981 included a sunset provision effective December 31, 1984 (which was subsequently extended to June 30, 1985). Thus it is entirely possible that policymakers will choose to adopt another new definition of disability in 1985 even before the impacts of the 1982 definition are truly known.

The second problem area in the Michigan business tax structure is property taxes. Without property tax abatements, the hypothetical firms in Michigan had the highest property taxes in the region. Even with abatements, Michigan's position did not improve as much as one might expect because three other Great Lakes states (Illinois, Indiana, and Ohio) also have abatement programs. Specifically, property tax costs for the hypothetical firms in Michigan, including the effects of property tax abatements, remained from 6 to 30 percent higher than the regional average. Although the margin of error for our estimates is probably the greatest for property taxes, it remains likely that Michigan's property tax costs are significantly higher than the regional average.

It appears that property tax abatements may present a significant dilemma for policymakers in Michigan. Economists and others have doubted for many years the efficacy of property tax abatements to spur new investment, and there

appears to be growing concern about the erosion of the property tax base (which is used primarily to support education) due to the widespread use of these abatements by local jurisdictions. Since Michigan's property tax costs with abatements may be above the regional average, it will be extremely difficult for policymakers to suggest elimination of this tax incentive, especially given the intense interstate tax competition that dominates the region.

Outside of workers' compensation and property taxes, Michigan is most unlike the other Great Lakes states in the way in which it taxes firms which are currently experiencing economic hardships and do not qualify for the small business credit on the Michigan SBT, probably cyclically sensitive firms. This result is caused primarily by two features of the Michigan tax system. First, the tax base of the SBT is broad and includes all of the value added of the firm versus the narrow tax base of the corporate income tax which basically includes only profits. Therefore, a significant tax liability may remain with the SBT even though the firm is experiencing losses. Second, the Michigan unemployment insurance system is more steeply experienced rated than elsewhere, so a bad unemployment record raises unemployment insurance costs relative to the other Great Lakes states.

Although it is beyond the scope of this study to assess the fairness of taxing firms with losses, it can be said that: (1) the Michigan legislature deliberately adopted a tax, the SBT, that would help it to stabilize revenues in good times and bad times; and (2) the state also adopted a steeply experience rated unemployment insurance system to help the state cope with its unemployment insurance debt. Although both of these policy decisions have undoubtedly imposed higher than average state and local taxes on these firms in some years, tax revenues from the SBT have been stable. Furthermore, at least partly as a result of the 1982 unemployment insurance reforms, Michigan will eliminate the interest-bearing portion of its unemployment insurance debt in 1985. It should also be pointed out that the state and local tax costs of such cyclically sensitive firms in Michigan would undoubtedly be much closer to the regional average if they were calculated over the entire course of the business cycle.

The discussion of the unique way in which Michigan taxes firms with losses highlights one of the other conclusions of this study. The tax statutes of all of these states are so complex that they give rise to the possibility of a wide range of comparative results across firms and states. Therefore, it may be neither possible nor advisable for a state to be average in all cases. What is important is that the citizens of each state are fully cognizant of the impacts of their tax structure.

Throughout this study we have tried to point out the real advantages of the Michigan business tax structure. The state is definitely not anti-business, but perhaps could better emphasize some of its positive features. First, the Michigan UI tax structure rewards firms with better than average unemployment records. Such firms in Michigan do not pay much higher UI rates than in most of the other Great Lakes states, although it is true that UI costs have been rising absolutely throughout the region. Second, the state should be commended for its aggressive action to solve its unemployment insurance debt problem. In a few years all firms in Michigan will benefit from the elimination of the debt. Third, it should not be overlooked that the SBT liability rises slowly with increased profitability. Fourth, the trend in both workers' compensation rates and claims is very favorable. Finally, the business portion of sales taxes in Michigan appears to be easily the lowest in the region.

It is also true that Michigan appears to be attractive for small, new firms. These firms receive very favorable treatment under the SBT; in most cases their SBT liability is much less than would be paid under the corporate income taxes of the other Great Lakes states. New firms in Michigan are also absolved from paying any federal penalty charges on the state's unemployment insurance debt through a state credit on the SBT. Finally, the state shares the lowest UI rates for new firms with one other state in the region. In short, it appears difficult to defend the notion that the Michigan tax structure retards firm start-ups.

Directions for Future Policy Research

There is no doubt about the need for additional, objective research about state and local tax costs. This study has not emphasized multistate firms.

Moreover, too few industries and states were considered to achieve full generality. Since the state and local tax structures in the Great Lakes region are especially fluid today, future studies may indeed find different burdens. There is also the need to begin the examination of whether Michigan tax dollars buy equivalent government services vis-a-vis the other Great Lakes states.

Future research should also include some important topics that pertain to the individual taxes. First, in workers' compensation there is a need for a data base about self-insurers. Assuming that firms self-insure to lower workers' compensation costs, it raises questions about the comparability of estimating workers' compensation costs across states using only commercial insurance rates. This potential bias may be especially important to Michigan since the state has the highest percentage of self-insurance in the Great Lakes region. But the unfortunate truth is that currently we know very little about this group of employers who account for almost 40 percent of Michigan's workers' compensation benefits.

Second, we lack knowledge about the aggregate importance of the business portion of sales taxes in Michigan. We should not be satisfied with guesstimates that businesses account for 15 to 30 percent of all sales tax receipts. Given the exemptions from the sales tax that seem to apply to manufacturing firms, it may be time to consider either elimination of the tax altogether or significant changes in the provisions of the tax to actually raise more revenue. We do not know currently if the tax is fair and equitable across industries or how important administrative costs might be as a proportion of business sales tax collections.

Finally, it is clear that we do not know enough about the impacts of property tax abatements. What industries are benefiting the most? How much investment is occurring without abatements? If the conventional wisdom is correct that not much industrial investment occurs in Michigan without abatements, then it is time to consider some permanent reduction in business property taxes, rather than continue the charade of granting selective property tax abatements. It also appears that machinery and equipment, at least in some industries, is being replaced far sooner than the 12 years allowed for

abatements, thus suggesting the consideration of possible revisions to this aspect of the law. Last, Michigan may wish to develop some variant of the approach used in Indiana for property tax abatements where the taxes abated begin at 100 percent and decline each year thereafter. It is likely that most firms would prefer more up-front help rather than spreading it evenly over a long number of years.

In summary, state and local business taxes in Michigan relative to the other Great Lakes states are average to above average. The good news is that Michigan is certainly within reach of the regional average. The problem areas which remain are in workers' compensation insurance and property tax costs. This study has tried to add to the base of knowledge about business tax costs. Important decisions will be made in the years ahead in Michigan about what levels of public spending are appropriate, for what purposes, and who will bear the direct burden of the taxes to support that spending. The citizens of Michigan must answer these difficult questions.

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