Report of the Indiana Fair Market Value Study

Presented to the
Interim Study Committee on
Real Property Assessment Practices
Indiana General Assembly

State Board of Tax Commissioners
Fair Market Value Study
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Introduction

This is the summary of the research project on market value assessment established by the Indiana General Assembly in 1993. Public Law 63-1993 directed the State Board of Tax Commissioners to “conduct a study to determine the impact of converting the current property tax assessment system to a system based on fair market value.” The board assembled the study team of David Good of Indiana University, Craig Johnson of Indiana University, and Joyce Man of Indiana University-Purdue University Indianapolis. Larry DeBoer of Purdue University was appointed director.

PL63-1993 established three areas of study. First, the project was to study “the assessing systems, including the methodology, structure, and procedure, in other states that use a property tax assessment system based on fair market value.” On September 26, 1996, the project presented the Interim Study Committee on Real Assessment Practices with a paper titled “Property Tax Assessment in Indiana and Other States,” which detailed the systems used in market values states and compared them to practices in Indiana.

Second, the project was to “determine the fiscal, legal, and administrative impact on state and local government.” On October 31, 1996, the project presented the Interim Study Committee with three papers, titled “Assessment Sales Ratio Studies,” “The Organization of Local Assessing Districts,” and “Use Value Assessment of Agricultural Land,” which detailed three aspects of the administration of market value systems on the state and local level.

Third, the project was to determine “the fiscal impact on the owners of the various classifications of property in Indiana.” These impacts, commonly known as the tax burden shifts, are presented in this summary. They include burden shifts among the agricultural, residential, business and utility classes of property. In addition, this summary presents information on further administrative and fiscal issues, including the impact of the burden shifts on economic incidence, their impact on economic development, their impact on capital financing, their impacts on business tax abatements and tax increment financing districts. Also discussed are the effects of market value assessment on growth and stability of the property tax base, and effects on Indiana’s property tax controls. Finally, the summary reports the results of a survey of Indiana citizens about property tax assessment issues.

PL63-1993 also directs the tax board to make “recommendations for the implementation of a property tax system based on fair market value.” Recommendations will be reported on December 10, 1996, under separate cover.

These reports fulfill the requirements made of the study by PL63. By mid-January the supporting technical documents for this summary will be available. By March, data and analyses for additional counties should be complete. In addition, the General Assembly may consider policy changes during the 1997 session which will affect tax burdens, tax administration and fiscal capacity. The study team stands ready to use the information, techniques and models developed for this project to assist in the analysis of future policy proposals.
Contents

Data 3

Tax Burden Shifts Among Property Classes 4

Comparison to Ohio: An Independent Check on Sales Disclosure Results 10

Residential Real Estate 11

Who Bears the Burden of the Property Tax? 14

How Do Business Property Taxes Affect Firm Location and Expansion? 16

Debt Issuance and Management 17

Tax Increment Financing 20

Property Tax Abatements 21

Assessed Value Growth and Stability 22

Property Tax Controls 23

A Survey of Indiana Residents 24

Appendix: Methodology for Calculating Tax Burden Shifts 27
Data

The foundation for all of this analysis is the data on selling prices, true tax values and property characteristics.

In PL63-1993 the General Assembly required that the selling price for all non-exempt real estate transactions be provided to the State Tax Board through the Sales Disclosure Form. The purchasers of real estate were required to answer several questions about the buyer, seller, the identification of real estate, the nature and conditions of the transaction as well as its net sale price. This process led to the collection of information on approximately 380,000 transactions. These transactions occurred at approximately the time in which the appraisals for the 1995 general reassessment were occurring. They needed to be matched to our second primary data source, the computerized property record card data base which is maintained by either township or county assessors. Property record card data contain measures of the physical characteristics of parcels used in assessment under Indiana’s current system.

To some extent, the data collection process replicated a part of a system that would have been used under market value assessment to establish market values in a particular jurisdiction. A number of problems emerged. First, information on sales disclosure forms was not validated after the forms were completed by buyers and sellers. About ninety percent of the sales disclosure forms lacked some crucial piece of information on identification, selling price or condition of sale. Second, the physical characteristics of the parcel at the time of sale had to be matched with its characteristics as assessed on the property record card. It is important that this match be validated, since it is quite common for the characteristics of the parcel to change near the time of sale, altered either by the old owner or the new one. Third, as parcels are discarded for lack of information or lack of matching characteristics, the sample of sales may become unrepresentative of the population of parcels. Procedures were established to remedy these three problems, including elimination of problematic sales and parcels, and weighting the sample using statistical methods so that it better reflected the parcel population.

Revaluing all the parcels in a county is a major undertaking. Revaluing all the parcels in the entire state is a very major undertaking. To keep the work manageable, we constructed a stratified sample of twenty counties representative of the state both geographically and by county type (urban, suburban or rural). Our choice of counties was limited by several factors. The county had to be willing to cooperate with the study. The county’s computer vendor had to be willing to cooperate. Many counties were late in completing their reassessments. Some computer vendors were unwilling to expend any effort in providing us with data until all of their regular customers (the county assessors) had completed their work. The counties in our sample are: Brown, Crawford, Decatur, Dekalb, Floyd, Hamilton, Harrison, Jay, Jennings, Johnson, Kosciusko, Marion, Morgan, Ripley, Scott, Shelby, Starke, Vanderburgh, Wabash and Wells. These 20 counties comprise approximately one quarter of the parcels in the state and should provide a good basis for the analysis of within and between class tax burden shifts. We are in the process of obtaining and converting data from many more counties to be used in further analysis.
Tax Burden Shifts Among Property Classes

A fundamental purpose of this study is to estimate the shifts in the burden of the property tax should Indiana move from its current true tax value system to a fair market value assessment system. This section describes estimates of how tax burdens might shift among four groups of taxpayers: owners of agricultural, residential, commercial/industrial, and utility property.

Methodology. The methodology for estimating tax burden shifts is discussed in more detail in the appendix to this summary. Briefly, residential, agricultural, commercial and industrial real property characteristics from property record cards were compared to sales prices from sales disclosure forms. Agricultural land assessments also were estimated using a use value assessment formula patterned after those of other states, and the results compared to existing assessments. These sales comparisons allowed calculation of assessment sales ratios by property class. The inverses of these ratios are multipliers, that is, the number which multiplied by current assessed value gives an estimate of market value. Data from personal property returns was used to estimate the distribution of depreciable property by age and expected life. This allowed simulations of several policy alternatives for personal property. The tax levy is assumed to remain the same, meaning the simulations are “revenue neutral.” This levy was allocated to property types by shares in assessed value under each system, and the resulting levies by property type were compared to show the burden shifts.

Assessment Sales Ratios. Assessment sales ratios were calculated for fourteen property types. A selection of median ratios—on a true tax value basis (assessment ratios times three)—are shown in the table. The lower the assessment sales ratio, the more assessments will rise in a switch to market value assessment. Among real property, agricultural property under market value assessment, and residential property have the lowest ratios. These properties would see the largest increases in assessments. Commercial, manufacturing and agricultural property under use value assessment have the highest ratios. These would see the lowest increases in assessments. Among personal property, the “small” change in personal property assessments, described below, produces the smaller increase in personal property assessments. The “large” change for other personal property, and the move to unitary assessment of utility property, produce the larger increases in assessments.

These changes are significant because those properties with smaller ratios require larger increases in assessments to reach market value, and so will probably pay a greater share of the tax levy under a market value system. Properties with higher ratios require smaller market value increases, and so will probably pay a lesser share of the property tax. Below are six scenarios which use these ratios to estimate tax burden shifts under market value assessment. They are designed to show a range of possible choices policy makers might make within a market value system.
### Median True Tax Value Sales Ratios for Selected Classes of Property

<table>
<thead>
<tr>
<th>Real Property</th>
<th>Scenario</th>
<th>Median TTV Sales Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>Use Value</td>
<td>.82</td>
</tr>
<tr>
<td></td>
<td>Highest/Best</td>
<td>.54</td>
</tr>
<tr>
<td>Residential</td>
<td></td>
<td>.62</td>
</tr>
<tr>
<td>Commercial</td>
<td></td>
<td>.81</td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td>.72</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personal Property</th>
<th>Scenario</th>
<th>Median TTV Sales Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Personal</td>
<td>“Small”</td>
<td>.91</td>
</tr>
<tr>
<td></td>
<td>“Large”</td>
<td>.55</td>
</tr>
<tr>
<td>Utility</td>
<td>“Small”</td>
<td>1.16</td>
</tr>
<tr>
<td></td>
<td>Unitary</td>
<td>.46</td>
</tr>
</tbody>
</table>

**Scenario 1. Baseline.** The baseline scenario assumes that residential, commercial and industrial land and structures are assessed based on market value, that is, they are valued at their predicted sales prices. Agricultural land is assessed based on a use value formula. Personal property true tax value assessments are unchanged. Residential deductions and exemptions, most of which are denominated in fixed dollar amounts, are assumed not to change. Business abatements and other deductions, most of which are denominated as percentages of assessed value, are assumed to increase in proportion with the rise in assessed value.

The baseline scenario is in no way a recommendation, nor is it a prediction of how Indiana’s assessment system will eventually look. It is merely a convenient starting point to which other scenarios can be compared.

In this scenario and all others, virtually all classes of property see assessed value increases. What counts for changes in taxes paid by each group, however, is the property’s increase relative to all others. A taxpayer’s share of the tax levy is approximately his or her share of assessed value. If market value increases a property’s value by more than those of other properties, it will make up a larger share of total assessed value, and hence will pay a larger share of the levy. This means that in the first scenario table, the decline in agriculture’s tax payment does not mean that agriculture’s assessed value declines. It increases, but less than that of residential property, so agriculture’s share in the total levy decreases. The table shows the median change in the tax levy borne by each
group of property owners, that is, the change for the county at the mid-point of our sample of counties. The table also shows the maximum and minimum changes among our sample of counties.

As might be expected, the first scenario produces a marked shift in property taxes towards residential property owners, and away from owners of all other property types. The tax declines for business and utility owners are especially large. Residential property assessments require the largest increase to reach market value, so the residential share in assessed value increases considerably. Personal property, which is primarily commercial, industrial and utility equipment and inventories, is assumed to be unchanged from current true tax value assessments (they increase three fold if assessments are moved to 100 percent of market value, rather than one-third). The shift towards real property taxpayers, primarily homeowners, is like that in the reassessments since 1980. Also, agricultural land is assessed at its use value, which produces average land assessments well below market values.

Homeowner deductions remain unchanged, because they are denominated in fixed dollar amounts, so they become less significant relative to new, higher market values. This causes a further increase in the residential share of taxes.

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>-7.6%</td>
<td>-0.8%</td>
<td>-21.1%</td>
</tr>
<tr>
<td>Residential</td>
<td>38.7%</td>
<td>57.8%</td>
<td>14.4%</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>-25.2%</td>
<td>-15.3%</td>
<td>-36.3%</td>
</tr>
<tr>
<td>Utility</td>
<td>-22.4%</td>
<td>-15.7%</td>
<td>-33%</td>
</tr>
</tbody>
</table>

In every county in our sample, this scenario showed homeowners with tax increases while other property owners saw tax decreases. There is a considerable range in the size of these tax changes, however, particularly for homeowners. In suburban counties, were a large portion of property is residential, the tax increase for homeowners is smaller. With much residential property, a shift of taxes to homeowners is shared more widely, so that each homeowner bears a smaller share of the burden shift.

**Scenario 2. Highest and Best Use for Agricultural Land.** The second scenario keeps all the assumptions of the baseline, except that agricultural land is assessed based on its highest and best use value. That is, farm land’s predicted sales price including potential development effects is taken as its assessed value.
Scenario 2: agricultural highest and best use value, constant deductions, no personal property change.

Percent Changes in Net Levies Paid by Property Type

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>19.2%</td>
<td>259.4%</td>
<td>8.2%</td>
</tr>
<tr>
<td>Residential</td>
<td>30.8%</td>
<td>54.1%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>-27.4%</td>
<td>-23.5%</td>
<td>-40.0%</td>
</tr>
<tr>
<td>Utility</td>
<td>-31.7%</td>
<td>-23.5%</td>
<td>-38.7%</td>
</tr>
</tbody>
</table>

There is still a large shift in taxes to residential property, though the median shift is about 8 percentage points smaller than in the baseline scenario. Agricultural property owners see a substantial tax increase, where in the baseline scenario under use value assessment agricultural taxes fell. Business and utility taxes again fall, by more than in the baseline scenario, because more taxes shift to agriculture.

Again, in every county agricultural and residential property saw increases; business and utility property saw decreases. In urban counties the increase in agricultural taxes was enormous--a maximum of 259%--because urban development opportunities increase land prices. The increase in agricultural taxes in suburban counties was greater than in rural counties, both because suburban land prices are higher, and because in rural areas there is more farm property, which spreads the burden of farm tax increases more widely.

Scenario 3. Proportional Increases in Residential Deductions. The deductions and exemptions that apply principally to residential property--the standard deduction and mortgage deduction are the most important--are increased to maintain the same proportion of deductions to residential assessed value as currently exists.

At the median, a proportional increase in residential deductions reduces the shift to residential property to 31 percent from 39 percent in the baseline scenario. The increase in residential deductions reduces the tax cuts to other sectors. Business and utility taxes still decline substantially in every county in the sample; in some counties, agricultural taxes increase slightly.
Scenario 3: agricultural use value, proportional homeowner deductions, no personal property change.

Percent Changes in Net Levies Paid by Property Type

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>-2.8%</td>
<td>2.7%</td>
<td>-19.1%</td>
</tr>
<tr>
<td>Residential</td>
<td>30.6%</td>
<td>49.6%</td>
<td>13.2%</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>-22.1%</td>
<td>-11.7%</td>
<td>-32.9%</td>
</tr>
<tr>
<td>Utility</td>
<td>-18.4%</td>
<td>-12.2%</td>
<td>-31.4%</td>
</tr>
</tbody>
</table>

4. A “Small” Change in Personal Property Assessments. The fourth scenario keeps all the assumptions of the baseline, except for a change in personal property assessment. The “30% floor” is eliminated. Firms are assumed not to be required to value their depreciable personal property at a minimum of 30% of acquisition cost, but are taxed on the fully depreciated value of their property. In addition, the 35% inventory exemption is eliminated. Firms are assumed to pay taxes on the full value of their inventories.

This “small” change in personal property assessments has little effect on overall burden shifts. Tax increases for residential property are slightly lower; decreases for business and agricultural property slightly smaller. Utility property sees a bigger tax break, because the elimination of the 30 percent floor dominates in an industry with relatively few inventories.

Scenario 4: agricultural use value, constant deductions, “small” personal property changes.

Percent Changes in Net Levies Paid by Property Type

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>-7.5%</td>
<td>-2.1%</td>
<td>-21.1%</td>
</tr>
<tr>
<td>Residential</td>
<td>35.6%</td>
<td>54.7%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>-22.6%</td>
<td>-13.6%</td>
<td>-34.7%</td>
</tr>
<tr>
<td>Utility</td>
<td>-17.3%</td>
<td>-9.6%</td>
<td>-26.0%</td>
</tr>
</tbody>
</table>
Scenario 5. A “Large” Change in Personal Property Assessments. The fifth scenario keeps all the assumptions of the fourth—baseline real property assessments, elimination of the 30% floor and the 35% inventory adjustment—and adds three more. Remaining life is calculated based on the higher percentages used in Ohio. Property is distributed among the four life pools based on estimated service life, not federal tax life (which includes accelerated cost recovery depreciation). Past acquisition costs are increased to account for inflation—a practice similar to increasing the construction costs used to value structures in a reassessment.

### Scenario 5: agricultural use value, constant deductions, “large” personal property changes.

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>-12.0%</td>
<td>-4.1%</td>
<td>-21.3%</td>
</tr>
<tr>
<td>Residential</td>
<td>20.0%</td>
<td>35.4%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>-12.2%</td>
<td>-6.8%</td>
<td>-20.2%</td>
</tr>
<tr>
<td>Utility</td>
<td>22.4%</td>
<td>30.4%</td>
<td>10.8%</td>
</tr>
</tbody>
</table>

The median residential tax increase is nearly cut in half under this scenario, and business tax cuts are also reduced by about half. Utility taxes increase, while they decreased in the baseline scenario. Unitary taxation is estimated to greatly increase utility assessments.

Scenario 6: All Changes from Baseline. Under this scenario, farm land is assessed at its highest and best use, homeowner deductions are increased in proportion to assessment increases, and the “large” personal property assessment changes are made.

### Scenario 6: agricultural highest and best use value, proportional homeowner deductions, “large” personal property changes.

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>17.0%</td>
<td>221.0%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Residential</td>
<td>4.5%</td>
<td>24.4%</td>
<td>-2.2%</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>-14.5%</td>
<td>-9.0%</td>
<td>-20.7%</td>
</tr>
<tr>
<td>Utility</td>
<td>16.0%</td>
<td>22.6%</td>
<td>6.3%</td>
</tr>
</tbody>
</table>

The median increase in residential taxes is cut to 4.5% in this scenario. There is still substantial variation among counties, but for the first time there are counties where homeowner taxes fall slightly. Business taxes still decrease, though by much less than in the baseline scenario. Utility taxes increase, again because of unitary taxation. Agricultural taxes increase because land is
assessed at its highest and best use value.

**Homeowner Taxes.** A survey of 534 Indiana residents taken in October and November, 1996, found that the average property taxpayer paid $1,316 in property taxes. This figure is used to put the median, minimum and maximum percentage increases in homeowner taxes into dollar terms.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Median Tax</th>
<th>Change</th>
<th>Minimum Tax</th>
<th>Change</th>
<th>Maximum Tax</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$1,825</td>
<td>$509</td>
<td>$1,505</td>
<td>$189</td>
<td>$2,076</td>
<td>$760</td>
</tr>
<tr>
<td>2</td>
<td>1,721</td>
<td>405</td>
<td>1,410</td>
<td>94</td>
<td>2,027</td>
<td>711</td>
</tr>
<tr>
<td>3</td>
<td>1,718</td>
<td>402</td>
<td>1,490</td>
<td>174</td>
<td>1,968</td>
<td>652</td>
</tr>
<tr>
<td>4</td>
<td>1,784</td>
<td>468</td>
<td>1,491</td>
<td>175</td>
<td>2,036</td>
<td>720</td>
</tr>
<tr>
<td>5</td>
<td>1,579</td>
<td>263</td>
<td>1,409</td>
<td>93</td>
<td>1,781</td>
<td>465</td>
</tr>
<tr>
<td>6</td>
<td>1,375</td>
<td>59</td>
<td>1,287</td>
<td>(29)</td>
<td>1,637</td>
<td>321</td>
</tr>
</tbody>
</table>

In the baseline scenario the average property taxpayer in the median county would see a tax increase of $509, from $1,316 to $1,825. In the county with the minimum increase, the tax hike would be $189. In the county with the maximum increase, the tax hike would be $760. Other scenarios show generally smaller increases. In scenario 6, which includes the biggest increases in farm, business and utility assessments, the median homeowner tax hike is $59, the maximum is $321, and the minimum shows a tax decrease $29.

**Comparison to Ohio: An Independent Check on Sales Disclosure Results**

Market value study personnel and tax board employees visited Sandusky County, Ohio, in November 1996, and gathered a random sample of 266 Ohio property record cards, as an independent check on the results from Indiana sales disclosure data. Over the following weeks these parcels were priced *under the true tax value system, as if they were located in Indiana*. The results allow a comparison of Indiana’s true tax value assessments and the assessments done in a market value state.

For this part of the study it was necessary to identify a county with a mix of residential, agricultural and commercial/industrial property. Sandusky County met the criteria and, with the cooperation of Ohio officials, was selected for study. Sandusky County has an agricultural base and several municipalities with commercial and industrial properties; Kosciusko and Scott counties in Indiana are similar. Sandusky County officials provided access to their records, computer system and field appraisers. Their history indicated a sound assessment practice.

Median Indiana/Ohio ratios thus represent the relationship between Indiana true tax values, as determined by tax board expert assessors, and Ohio market values, as determined by the Sandusky County assessor (in Ohio, the county auditor acts as the supervisor of assessments). The agricultural comparisons used the market value of agricultural land, not the use value. The
following table shows the results.

### Ratios of Indiana True Tax Values to Ohio Market Values,
266 Sandusky County Parcels

<table>
<thead>
<tr>
<th>Property Type</th>
<th>No. of Parcels</th>
<th>Indiana/ Sandusky, Ohio Median Ratio</th>
<th>Indiana Sales Disclosure Median Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>56</td>
<td>.45</td>
<td>.54</td>
</tr>
<tr>
<td>Residential</td>
<td>176</td>
<td>.66</td>
<td>.63</td>
</tr>
<tr>
<td>Commercial</td>
<td>25</td>
<td>.84</td>
<td>.81</td>
</tr>
<tr>
<td>Industrial</td>
<td>9</td>
<td>.96</td>
<td>.72</td>
</tr>
</tbody>
</table>

The correspondence is not perfect, of course, but the two commercial ratios and the two residential ratios are nearly the same. In both the Indiana/Ohio ratios and the Indiana sales ratios, the commercial and industrial property ratios are higher than the residential property ratio, which is higher than the agricultural property ratio. As might be expected, industrial property shows the biggest difference, due perhaps to the small sample size in Ohio, the small number of Indiana manufacturing sales, and the wide variety of property included in the category.

The Ohio study not only provides supporting evidence for the assessment-sales ratios determined from Indiana sales disclosure data, it shows reasons why Indiana true tax values are generally below market values. It became evident that the Ohio market approach included additional factors that the current true tax value system ignores. For example, in Ohio the assessment of a fast food chain restaurant would include its franchise value, while a parcel with similar characteristics and location with no franchise connections would be valued substantially lower. Indiana’s system would value both restaurants the same. In the valuation of an apartment complex, Ohio’s system accounts for the current demand for housing in addition to construction costs and land values. Indiana’s system would not account for housing demand, creating a substantial difference. The Ohio system also shows substantially lower values on agricultural structures. Relatively new buildings were valued below the current cost of construction. Indiana’s assessments would be higher. Attributes such as franchise value and estimates of housing demand introduce elements of subjectivity in market value assessments, which may or may not ultimately be tested against sales prices.

### Residential Real Estate

Criteria for Evaluating an Assessment System. In this section, we describe a set of results from different analytical models used to assess Indiana’s current assessment methods along with some proposed new methods. To place those results in context, we first describe the criteria for
evaluating the results. These criteria form the core measures of tax policy analysis and serve us by measuring overall shifts in tax burden. A fair tax provides a socially desirable distribution of tax burden. There are two traditional criteria characterize fairness: horizontal equity and vertical equity.

Horizontal equity means that “people in equal positions should be treated equally.” Or, if two individuals would be equally well off before taxation, they should also be equally well off with taxation. We are interested in knowing whether people with the same amount of wealth across the state will pay the same amount of property tax. The most widely used measure of horizontal equity is the coefficient of dispersion. This measure is based on the assessment/sales ration for individual real estate parcels (the amount of assessment, and ultimately tax paid, per dollar of market value). In an ideal tax system with perfect horizontal equity, all real estate will have the same value of this ratio. This is impossible to obtain in practice, since it would require the assessor to perfectly predict the selling price of real estate. While variations in this ratio will occur, an assessment system which more closely matches the market value of real estate will produce smaller variability among different tax payers then will a less horizontally fair assessment system. Formally, the coefficient of variation (COD) measures the average percentage of discrepancy from the median assessment/sales ratio among a group of tax payers. For single family residential real estate described at the county level, values for the coefficient of dispersion of 15% are considered to be quite good. Values in the 20% to 25% range are far more common.

Vertical equity refers to distributing tax burdens fairly across people with different abilities to pay. In essence, the progressiveness, regressiveness, or neutrality of a tax policy measure the tax’s vertical equity. Vertical equity assesses whether wealthy individuals pay a disproportionate (high or low) value of the tax. Vertical inequity occurs when the assessment/sales ratio varies systematically across parcels of different values. A regressive (progressive) tax results if this ratio decreases (increases) as property values increase. This view of vertical equity is the basis for the IAAO model of vertical inequity. An alternative conceptualization is to ask if the assessed value increases more than proportionately or less than proportionately than the sale price increases as you examine higher and higher valued parcels. This view is the basis behind another group of models. These models differ in their inherent statistical assumptions and may produce somewhat different biases toward progressivity or regressivity. These will be discussed along with the results.

*Fairness of Indiana’s Current System.* There are two ways to view a market value system: market value as a method, and market value as a standard. The measures of horizontal and vertical equity discussed in the previous section, when applied to Indiana’s current assessment system view market value as a standard. In effect, we ask, how useful of a predictor, adjusted for scale, are the assessed values in Indiana today of the selling prices of parcels. As stated previously, the coefficient of dispersion measures the average percentage of prediction error. They are considered to be the primary performance measure for how well a market value system operates. These coefficients of dispersion were calculated for the twenty counties in our sample.

While the median coefficient of dispersion was 30%, high by IAAO standards. However, it is
important to qualify these values by our lack of ability to verify the physical features of the property at the time of sale. Were observations eliminated which are misrepresented in the property record card data base, these values would no doubt be lower, perhaps even substantially lower. Even under these circumstances, these results are interesting because they demonstrate that true tax assessment appeared to work well in some instances: Four counties had CODs below 25%, one below 15%. These tended to be suburban counties. These suburban counties commonly have detailed land orders, frequent sales with which to base the land orders, and relatively homogeneous properties within neighborhoods. The poor performers were all rural and urban counties, with values as high as 40%. In contrast to the suburban counties, rural counties tend to have less detailed land orders, while both urban and rural counties tend to have a lot more diversity making the delineation of neighborhoods difficult. Our results showed the current system to range from neutral (again performing well in suburban counties), to fairly regressive, particularly in one rural county.

Several physical characteristics were correlated to the assessment sales ratio. A relationship indicates that information in the explanatory variable could be used to predict the assessment sales ratio, and consequently reduce its variability (and lower the COD). We find that older homes are systematically under-assessed, at approximately .5% per year. This indicates that a 50 year old home is approximately 30% under-assessed relative to a market standard than is a new home. We find that homes in poor condition, with mobile homes on the lot, are systematically over-assessed, thus explaining one potential source of the regressivity.

\textit{Market Value Assessment.} In order to determine how much better a market value assessment system would be, we simulate the CAMA process in three counties: Wells, Hamilton and Brown. These are three counties with a moderately large amount of data. While there are several possible modeling strategies, including linear regression with either additive or multiplicative models, nonlinear regression, adaptive feedback or neural net methods, in addition to a wide variety of heuristic combinations of these approaches, most comparative studies suggest that a nonlinear model in which sizes of features enter additively, but quality attributes of those features enter multiplicatively performs as well as any and is more easily verified by common sense. In addition, additive disturbance terms describing neighborhood effects are incorporated into the model.

The data were divided into two halves, and market value model estimated using one half. Predicted values for the other half of the sample were created and used as assessed values. The resulting COD averaged three points lower when using the estimated selling price rather than true tax value assessment.

\textit{Reliance of Models on Subjective Judgement.} One of the motivations for the St. Johns Township v State Tax Board case was that the belief that the current tax system relied too heavily on the subjective judgements of assessors, and that these judgements would vary widely. In this section we examine the extent to which a market value process would lead to assessments that are free from subjective judgements. There is an expectation that an impartial marketplace allowing buyers and sellers to compete will generate the one true value which unambiguously represents a
parcels worth. While this theoretical notion has a great deal of political appeal, there are many factors which suggest that the theoretically perfectly functioning market does not exactly apply to housing. First, the sale price will not be reproducible, that is, if a house is resold, even quickly without changes, the second selling price will inevitably be different from the first. This suggests that even the selling price is not an exact measure of the average value of a parcel over the assessment period. Second, even if one is willing to accept that the actual selling price is the correct measure to use for houses that sell, for most parcels no sale will have occurred. Consequently, even a market value assessment process is inescapably bound by several levels of judgement the appraiser subjective judgements about what constitute comparable sales must be made. Are the houses similar enough in style, size, condition, location?

The results from the models in the previous sections do suggest some things that can help reduce the role that judgements, at least the subjective judgements of individual assessors, play in the assessment process. They suggest that the single most important variable in the model, after the gross size of the structure, was the parcel’s location. Once included, the importance of other variables, including the grade, condition and neighborhood quality was greatly diminished. While this does not suggest that a reduction of the subjectivity can of an assessment process can be eliminated. It does suggest that a more appropriate place for that subjectivity to take place is in the definition of homogeneous neighborhoods from which comparable sales will be drawn rather than fine tuning. This approach lets the average bundle of housing services in a homogeneous neighborhood be determined in a competitive market by the average selling price. The physical characteristics and subjective measures would be used only to form adjustments to that value. If the neighborhood is in fact homogeneous, than these adjustments will not likely be large. This suggests a shift in the role that the land commissions play in the process from trying to subjectively set a price for a lot which captures all of the benefits of location (highly subjective), to one which merely tries to place boundaries around homogeneous neighborhoods or, where homogeneous neighborhoods are too small to generate sufficient sales, amalgamate neighborhoods until one of sufficient size can be constructed.

**Who Bears the Burden of the Property Tax?**

The estimates of tax burden shifts are for the statutory tax liability, meaning the taxpayers that receive and pay the tax bills. But the statutory taxpayer may not bear the ultimate burden of the property tax, especially in the case of taxes on business. Business taxes may be shifted to consumers in higher product prices, or to employees in lower wages and benefits, or they may be borne by business owners as a reduction in profits. The tax burden after this tax shifting is sometimes called the economic incidence.

Three views have been advanced over the past century about the economic incidence of the property tax. The traditional or "old" view contends that the property tax is equivalent to an excise tax and the tax burden on business property is shifted to consumers. This would make the property tax regressive, meaning it is borne most heavily by lower income renters. The "new" view concludes that the property tax is a capital tax which is borne primarily by owners of capital. Market forces prevent business owners from passing the tax to customers. This would make the
tax progressive, borne by property owners who tend to have higher incomes. The benefit view argues that the property tax is a benefit tax. Taxes on both residential and business properties cover the cost of local public services consumed by property owners. Progressivity or regressivity is irrelevant in this view, since the tax acts as a user fee on public services.

Each of these views has its uses, and may be correct in particular circumstances. If a single community such as a county or city raises its property tax rate in order to replace another revenue loss, so that public services do not change, then the traditional view offers the most insight. Since taxes remain at lower levels in other places, businesses may choose to locate and expand elsewhere. This may reduce the supply of goods and services locally, which raises their prices. Higher taxes are effectively passed on to consumers in higher product prices. Since one of these products is rental residences, renters bear at least part of the burden of the property tax hike. The number of job opportunities may fall with the tax hike, reducing wages and benefits. Employees bear the burden of the tax hike through lower pay. Note that land owners do not have the option of moving--land is fixed where it is. For this reason, land owners are thought to bear the full burden of the property tax on land.

If all jurisdictions raise their property taxes at once, or a large, attractive jurisdiction raises its taxes, businesses will not be able to change their locations to avoid higher taxes. The "new view" is appropriate in this case. The supply of products or demand for employees will be unchanged in each locality, so prices and wages will not change. Business owners will bear the tax burden through lower profits.

Suppose that people can choose where to live according to their preferences for public services and taxes, and that zoning restrictions require new residents to buy or build houses which add enough to property taxes to pay for the added services they consume. Then the benefit view is useful. People who like public services and are willing to pay the taxes required to support them will live in higher tax and service communities. People who prefer lower taxes and are willing to give up public services will live in lower tax and service communities.

Research on economic incidence has found that 55 to 70 percent of a property tax change is borne by property owners, with the remaining 30 to 45 percent shifted to renters of residential or commercial property. Recent economic analyses suggests that the property tax in the United States is proportional or slightly progressive. A study of Indiana taxes found that the property tax is regressive under the assumptions of full or partial tax shifting to consumers in the form of higher prices. Under the assumption of no forward shifting to consumers, the property tax is regressive at lower incomes and progressive at higher incomes.

What does economic incidence imply for a shift to market value? In each tax shift scenario a shift to market value reduces the taxes on commercial and industrial businesses. The traditional view seems to apply, because Indiana is making a tax change by itself, and it is a revenue neutral tax change not tied to public service levels. Lower business taxes would encourage business expansion and location from out of state. This would increase product supply, lowering prices, and increase job opportunities, raising wages. At least part of the property tax cut to business
would be passed on to consumers in lower or less rapidly increasing prices, and to employees in
higher wages and benefits. Research puts the percentage of tax changes shifted to consumers in
Indiana at 32 percent. Thirty-two percent of the 25 percent commercial/industrial tax cut in the
baseline scenario is about 8 percent. If this cut is shifted to consumers, most of whom are
homeowners, the tax shift to residential property is cut by about one-fifth, but is still substantial.
Renters would benefit from lower or less rapidly increasing rents as the supply of rental
apartments increased.

How Do Business Property Taxes Affect Firm Location and Expansion?

The traditional view of economic incidence assumes that businesses respond to local tax
differences in their location and expansion decisions. For years economists were skeptical, for
research showed that state and local taxes had little effect on the economic growth of states or
metropolitan areas.

However, new research in the 1980s and 1990s has found that state and local business taxes do
have an effect on the economic development. Results have shown that if all state and local
business taxes are reduced by 10%, over time local employment, production, business capital
stock, the number of new branch plants and other measures of business activity increase by
between 1.5% and 8.5%.

Changes in business property taxes appear to have greater effects on economic growth than
changes in other business taxes. The location disincentives of property taxes are strongest for
large firms and tend to decrease with firm size. High property taxes represent a significant
disincentive to firm location in an urban area.

Effects of the business property tax on the business growth of different jurisdictions within a
metropolitan area are far greater than the tax effects across metropolitan areas or states. If a
given small suburban jurisdiction within a metropolitan area raises its tax by 10 percent, it can
expect in the long-run a reduction in its business activity by between 10 to 30 percent. If an entire
metropolitan area or state raises its tax by 10 percent, the estimated long-run effect would be a
reduction of business activity between 1 percent and 6 percent. These estimated tax effects
assume that public services are held constant as taxes change.

If tax cuts are financed by cutting public services important to businesses, the net effect on the
state and local economic development could be negative. If high property taxes are used to
finance public services such as fire and police protection, local schools, highways, water and
sewer lines and other types of public infrastructure, or any other public expenditure except for
welfare, the number of small business start-ups increases, state personal income rises and state
private employment grows.

Manufacturing businesses are more sensitive to taxes than other businesses, because they are
“capital intensive,” meaning they have more structures and equipment to tax. Metropolitan areas
with higher relative property taxes tend to attract more labor-intensive industries.
Again, what are the implications of this research for Indiana’s potential shift to market value assessment? If commercial/industrial taxes are cut 25 percent, as in the baseline scenario, the new research implies that Indiana should see an increase in economic activity—production, employment, firm locations—of 3 to 15 percent, in the long run (that is, one to six percent for every ten percent cut, statewide). This is a wide range of estimates. Manufacturing firms may be most likely to respond to the property tax cut. The scenarios also show a wide range of commercial/industrial tax cuts, from 15 to 36 percent in the baseline scenario. This implies the potential for shifting of firm locations within the state, since the response of businesses to local tax differences is greater than to national tax differences. Counties with smaller business tax cuts could actually lose business location and expansion to counties with bigger tax cuts.

**Debt Issuance and Management**

This section looks at the impact of fair market value assessment on local government debt issuance and management. The analysis focuses on the capacity of local governments to issue bonds and support debt payments. The results show that conversion to a market value assessment system will likely benefit local governments that sell property tax-backed debt by strengthening repayment security, increasing credit quality, and encouraging issuance of unlimited tax bonds rather than lease rental bonds. Combined, these effects should result in lower borrowing costs. Also, it is clear that conversion to a market value property assessment system will not, in any manner, jeopardize debt service payments on existing general obligation or lease-backed debt supported by an unlimited property tax pledge.

Local governments in Indiana, like most local governments throughout the nation, rely on the local property tax base to generate revenue to repay debt issued to finance capital improvement projects. Local governments can sell general obligation (GO) bonds which are supported by the full, faith and credit, or unlimited taxing power, of the entire taxing unit. But there are state constitutional and statutory provisions that restrict the ability of local governments to issue GO debt in Indiana.

Article 13, Section 1 of the Indiana Constitution limits the total principal indebtedness of any political subdivision to no more than 2 percent of the net assessed valuation of taxable property within the taxing unit. The debt limitation applies to 2 percent of net assessed valuation, not 2 percent of true tax value. The constitutional debt limit applies to each municipal corporation individually, and not in the aggregate to municipal corporations which may cover the same area or include the same taxpayers. This has led to the establishment of many overlapping municipal corporations (e.g., school, jail) and special taxing units (e.g., special districts such as fire, library, parks and recreation, sanitation, and redevelopment authorities) that use the same property tax base as the general government to finance capital improvements.

Local government property-tax backed debt in Indiana consists primarily of non-GO bonds because of these debt limits. Most local property-tax backed bonds sold in Indiana are lease rental bonds. During 1992-1995, more than $2.3 billion in lease rental bonds were sold, compared to only $218 million in unlimited tax (GO) bonds. Lease rental bonds account for 88
percent of all of bonds sold by local entities in the state. Most general governmental and school corporation lease rental bonds are repaid directly from lease rental payments that are raised from property tax revenues.

Lease rental bonds are popular with local governments precisely because they are not subject to the 2 percent debt limit. But the levy of taxes by a school corporation to pay the rent due and payable under the lease is mandatory. Unlike most lease rental bonds sold throughout the nation, Indiana lease rental bonds do not contain an annual appropriation-out clause enabling the government to annually withhold debt service payments.

In effect, such lease rental bonds are structured as synthetic GO bonds. This provides Indiana lease rental bonds with two additional layers of repayment security that is absent most other lease rental bonds in the nation. The additional layers of security have been fine tuned over the years so that, research shows, investors favorably view Indiana lease rental bonds since they exhibit interest costs no different than GO bonds.

Investors measure the credit worthiness of local bond issues with the debt-to-property value ratio. This ratio measures the impact of the debt burden on the government’s tax base. The estimated full market value of taxable property is used as a measure of local government wealth and, therefore, is perceived by market participants to reflect the capacity of the local government to service its debt. In the municipal securities market, the definition of true tax value in Indiana is universally interpreted as the estimated full market value of all taxable property in the taxing district -- but it is not. This is important because a debt issuer’s taxable property value, as viewed by the market, has a direct and significant impact on the issuer's debt service (principal and interest) costs. Specifically, research shows that the higher the debt ratio, the higher the borrowing costs.

Market value conversion will result in higher assessed property values, holding the current assessment ratio constant. This should decrease the debt-to-assessed value ratio by an average of 23.5 percent. In addition, without a modification in the 2 percent debt ceiling, the higher assessed values under a market value system will be large enough to free up additional debt issuance for some local governments. This could lead to the sale of fewer lease rental bonds and more unlimited property tax bonds, which would lower overall borrowing costs.

Credit quality generally refers to the ability and willingness of local governments, including school corporations and special districts, to repay their debts in full and on time. Credit quality is often measured with a credit rating from one of the major rating agencies, Moody’s Investors Service or Standard and Poor’s. Credit rating agencies use symbols to indicate their appraisal of credit worthiness. For bonds, Moody’s uses Aaa, Aa, A, Baa, B and below to indicate the best to poorest quality. Bonds rated Aaa to Baa are considered worthy of investing in (investment grade) and bonds rated below Baa are considered speculative.

A rating seeks to answer a simple question for lenders: What is the probability of full and timely repayment of principal and interest on this debt obligation? Thus, the credit rating is one of the
most significant determinants of the issue’s borrowing cost because it differentiates credit quality. Higher credit ratings result in lower borrowing costs; lower credit ratings result in higher borrowing costs. For example, in a recent study, the yield spread between Aaa-Aa rated bonds, Aa-A rated bonds, and A-Baa rated bonds, was 8 basis points, 27 basis points and 80 basis points, respectively. On a $20 million twenty-year bond issue, the 80 basis point difference between an A and Baa credit rating could add more than $2 million to the borrowing costs of the Baa rated issuer. A small interest rate increase results in a large change in interest costs.

The debt ratio is one of the most important determinants of a credit rating. Moody’s Investor Services publishes annual median debt ratios for debt issuers throughout the nation. The medians are national ratios that are calculated for types and levels of governments and broken down by size of government. Most local governments in Indiana have a debt ratio higher than the Moody’s median. This indicates that this influential rating firm views Indiana local governments as having less ability to pay than most similar governments nationwide.

Market value assessment is projected to produce higher property values than true tax assessment. Debt ratios calculated with market value in the denominator will be markedly lower than debt ratios with true tax value in the denominator. This will reduce debt ratios significantly across the board, and the debt ratios of some governments currently above the Moody’s median will drop below the median.

Research shows that issuers with debt ratios above the median get charged higher interest rates than issuers below the median. Local governments save money (pay less debt service) if they are below the median, and lose money (pay more debt service) if they are above the median, and the farther above the median, the more money they lose (the more debt service expense). If credit rating agencies regard the new debt ratios as new information on credit worthiness, they would have to reconsider local ratings. True tax value assessment significantly undervalues property-based wealth in Indiana, and that undervaluation has been transmitted into the undervaluation of local credit quality in Indiana. This has a significant adverse impact on local issuers in Indiana since lower credit ratings result in higher borrowing costs.

Credit rating companies may argue against considering new market value assessments as new and significant information, so as not to require a revision of local credit ratings. They may argue that even though true tax value was shown as equivalent to fair market value on disclosure documents, they suspected that true tax property values probably did not really equal fair market property values, but they did not know whether true tax values undervalued or overvalued fair market values. They probably could not have known that true tax value assessment undervalued market property values. For, if the rating companies, and other market participants (e.g., financial advisors, underwriters, etc.), did in fact know, they had a responsibility to record the accurate figures onto disclosure documents, and incorporate them into the rating analysis and bond prices.

The revised debt ratios under a market value system should reduce borrowing costs for all local issuers. The biggest reductions will accrue to issuers that are slightly below the Moody’s median; issuers whose property values increase more than the state average; small issuers that currently
fall between credit quality cracks, such as the 24 percent of school corporation bonds rated below A, despite the state efforts at credit enhancement. Should the 2 percent debt limit remain, market value will free up debt capacity for general obligation bond issuance and strengthen the repayment security of the property tax base. This should reduce the overall costs of borrowing to local governments, including the additional administrative and issuance costs of setting up and maintaining special financing authorities and special taxing districts merely to avoid the 2 percent debt limitation rule.

**Tax Increment Financing**

This section analyzes the impact of conversion to market value assessment on Tax Increment Financing (TIF) districts. A change to market value will significantly affect TIF districts, and overlapping taxing districts, throughout the state. The changes can be adequately dealt with, however, by adapting the current mechanism for handling statewide general reassessments to a market value assessment system.

Tax increment financing districts pay for infrastructure improvements which enhance development with the property taxes generated by the development itself. To set up a TIF district a county, city or town must designate an area expected to realize significant increases in assessed value from development. An independent district or authority governed by a redevelopment commission is usually set up to oversee the TIF district. The commission is authorized to issue bonds, which in most cases are not subject to state debt limitations or public referendum requirements, to finance development projects. The authority assumes sole responsibility for debt repayment, but has no taxing power.

Property tax increment (PTI) bonds are commonly sold to generate development funds in TIF districts. Incremental property taxes are levied only on the districts new assessed valuation after a given base year is established. The incremental portion of the tax base is derived from the increase in net assessed real estate valuation in the district. In addition, PTI bonds, though commonly secured by incremental real property tax revenues, may also be repaid from depreciable personal property increments in some cases. Tax increment bonds in Indiana are usually secured by the issuing jurisdictions’ general property tax base, where general property tax revenues serve as a secondary (back up) source of debt service repayment.

The use of TIF funding has grown rapidly in Indiana during the 1990s. Net assessed value taxed by TIF districts grew from $44.3 million in 1989 to $476 million in 1995--more than a ten-fold increase in seven years. TIF net assessed value, as a percentage of the total, grew from 0.2 percent in 1989 to 1.6 percent in 1995.

Reassessment can alter the TIF revenue calculation by changing the assessed values and tax rates that apply in the district. Under current law, the State Board of Tax Commissioners is required to make a one-time adjustment to the base assessed value to neutralize any effect of reassessment. The adjustment is based on a comparison of the changes in net assessed value between the TIF district and the county. The amount of the TIF base assessed value adjustment is computed by
the County Auditor and certified and approved by the State Board of Tax Commissioners. The adjustment assures that tax increment revenue will equal or exceed the amount that would have been produced without a reassessment. It also assures that increases in the assessed valuation of overlapping taxing districts are not automatically, and inappropriately, captured by the TIF allocation area.

This TIF base adjustment procedure could be applied upon a shift to market value assessment, either as is or with modifications. A possible modification would be to derive the increment assessed value by summing debt service, reserve, and previously planned spending requirements of the TIF district, and setting the increment assessed value at a level to produce this amount.

Market value assessments may prove to be more volatile than true tax value assessments, with greater potential increases and decreases in assessments. Decreases in the market value of property in the TIF district will cause a decrease in TIF revenue.

Property Tax Abatements

Many Indiana counties, cities and towns offer property tax abatements to owners of real and personal property in order to encourage economic development. Real property abatement values could markedly change under a market value assessment system. If abatements are set as dollar values, and as expected market values are greater than current true tax values, abatable property values will not automatically change, and would decrease as a percentage of gross assessed real estate. However, the legislature may decide that the dollar amount of the abatement should remain a fixed percentage of the (expected) assessed value throughout the length of the abatement. Increases in assessments due to the market value shift would then increase the dollar amount of abatements.

The following presents the baseline and two other scenarios that illustrate the likely change in real estate abatements under a fair market value system. The baseline scenario assumes that abatements do not rise with the change in assessments. Currently, real estate abatements account for about 1.4 percent of gross real estate value. If real estate values increase, but real estate abatement values remain unchanged, abatements will decrease to only .35 percent of total real estate, a 74 percent decrease.

Two scenarios show what would happen if abatements increased proportionately with business assessed values. If the abated property is primarily commercial, abatements decrease as a percent of total real property assessments from 1.4 percent to 0.9 percent, a 35 percent decline. This occurs because total real property assessments grow faster than commercial property assessments, and therefore commercial property abatements, especially in urban and rural counties. Where abated property is primarily industrial, the share of abatements in real assessed value increases 10 percent, from 1.4 percent to 1.55 percent.

Therefore, counties where industrial abatements account for most real property abatements will see their abatements increase as a percent of total real estate under a market value system. These
counties would most likely be suburban and rural counties, where industrial property probably accounts for a greater share of abatements than commercial property.

If personal property abatements change in proportion to personal property assessments, the result depends on what assessment policy changes are made. If the “small” changes are made, personal property assessments increase little, and the increase is due to changes in inventory assessment. Depreciable property assessments decline because of the elimination of the 30 percent floor. This market value approach would reduce abated business personal property throughout the state, in absolute terms and as a percent of gross assessed business personal property. In contrast, if the “large” changes are made, abated business personal property valuations increase. Abatements would increase substantially in absolute terms, but only modestly as a percentage of business personal property.

**Assessed Value Growth and Stability**

*Assessed Value Growth.* Changes in Indiana real property assessments were simulated for the 1973-94 period as if they were on a market value basis. This was done by developing an index of the amount of real property in Indiana from existing data, and applying pricing indexes from market sales and cost data for various classes of property.

The results showed that Indiana real assessed values would have grown faster had property been assessed under a market value system over this period. With annual valuation—that is, new prices applied to property assessments every year—average growth under market value would have been nearly eight percent per year, compared to 6.5% under the true tax value system. Over twenty years, this difference amounts to about 33% more rapid growth under a market value system.

The biggest growth differences between true tax value and market value appear in the 1970s. High inflation rates are reflected in double digit percent increases in market values, while true tax values never rose by more than 5% per year. In the mid-80s declining farm land values actually reduce market value assessments, so that overall 1980s growth in values is similar between the two systems.

As a check on these simulation results, Indiana assessed value growth over the 1961-92 period was compared to growth in other states. Assessed value was divided by population to account for differences in economic and population growth among the states. Indiana ranked 28th in per capita assessed value in 1961, and fell to 37th in 1991. Indiana’s growth rates ranked in the lower third of states in the 1960s, 1970s and 1980s. Indiana’s per capita assessed value grew 352% over this period, about half the national median of 722%. While these results do not control for policy changes that many states made over this period, they are consistent with the simulation showing more rapid growth under market value systems.

*Assessed Value Stability.* Stability is more dependent on the length of the assessment cycle than on the choice of true tax or market value assessment systems. The standard deviation of growth rates for the actual true tax value system is 12.4%, while for the market value system with annual
valuation it is only 6.3%. A higher standard deviation indicates less stability, so this implies that growth under the true tax value system is less stable. However, if reassessment years are excluded, the true tax value system has extremely stable growth rates, typically varying around the long term average by less than one percentage point. Further, if market values are updated only in Indiana reassessment years, the standard deviation for the market value system is greater than that for the actual true tax value system.

Indiana policy makers know that the length of the reassessment cycle influences the stability of assessments. The large “reassessment shocks” of 1980 and 1990 caused the introduction of new tax breaks, like the homestead credit and the standard deduction. One justification for moving to a shorter reassessment cycle after 1990 was to lessen the size of reassessment shocks.

It appears that most of the instability of assessments in a market value system with annual revaluation results from variation in farm land values. This is due to the run up of farm land values during the 1970s and early 1980s, and the radical fall of values in the mid-1980s. In farm dominated jurisdictions with a market value system and annual valuation, during 1974-82 assessed value would have risen by 15% to 25% per year. In 1986-88, assessed value would have dropped radically, from 7% to 25% per year.

As a test of this simulation result, assessed value changes in metropolitan and farm dependent counties in 12 Midwestern states over the 1971-91 period were compared. Farm dependent counties show less assessment stability than metropolitan counties in market value states, rising more slowly or even falling during the land value drop of the 1980s. Further, farm dependent counties under Indiana’s true tax value system appear to show greater stability than farm dependent counties under market value systems in other states. This is true despite the fact that most market value states used some form of use value assessment of farm land.

**Property Tax Controls**

Indiana’s property tax controls put a floor and a ceiling on the annual percentage increase in a civil government’s maximum property tax levy. The floor is five percent; the ceiling is ten percent. To determine where in this range a government’s levy increase lies, the annual percentage increases in assessed value are calculated for the past three non-reassessment years. If the average of these percentage increases is less than five percent, then the maximum levy rises five percent. If the average is greater than ten percent, then the maximum levy rises ten percent. And, if the average is between five and ten percent, the maximum levy rises by that amount. Of course, local governments are not required to increase their actual levies by any amount—they may tax at less than their maximum levy limits. Most jurisdictions are at or near their maximum levies, however.

The great majority of jurisdictions saw five percent increases in their maximum levies in 1995. Only 8% of counties, 10% of townships and 15% of cities and towns had growth limits greater than 5%. Overall, about 90% of all jurisdictions are at the five percent floor. Many local officials, in fact, see the five percent floor as an annual five percent ceiling on their property tax
levy increase.

Market value assessment may or may not affect the working of these property tax controls, depending on the frequency of reassessments or revaluations. In the current true tax value system, real property reassessments occur periodically (every four years after 1995-96), and the calculation of the growth factor excludes the reassessment years. Thus, the growth factor reflects only the between-reassessment changes in real property assessments. Between reassessments, real property assessments change only with new construction and land use changes, not changes in property prices.

Assessed value increased an average of 6.5% annually between 1974 and 1994. Excluding the reassessment years the annual increase was only 2.5%. This is, in fact, exactly the average annual assessed value growth experienced by 2,033 Indiana civil governments over the 1992-95 period. The average annual assessed value growth estimated for a market value system over the same period is 8%, 5.5 percentage points higher than the current annual average for non-reassessment years. If revaluation was annual, and this amount was used to calculate the growth factors used in the tax controls, clearly most jurisdictions would be above the five percent floor, and many would be above the ten percent ceiling. This depends entirely on the frequency of reassessment and revaluation. If true tax value assessments were revalued every year, so that no reassessment year was excluded from the growth factor calculation, most jurisdictions would be above the five percent floor as well. Market value assessment growth is likely to exceed true tax value assessment growth over the decades, however.

A Survey of Indiana Residents

In October and November, 1996, the Indiana University Center for Survey Research conducted a telephone poll, contacting a random sample of 534 Indiana residents. Included were questions about property tax assessment policy commissioned by the Market Value Study. This section summarizes the results of this survey. Percentages should be accurate within plus or minus 4.5 percentage points. Percentages exclude those who answered “don’t know” and those who refused to answer.
The Tax Court Decision. Indiana residents were asked whether they agreed with the Tax Court that “the current system for assessing property is unfair.”

72.4% agreed with the court.
16.2% disagreed with the court.
11.4% said they didn’t know enough about the decision to answer.

Renters, people who paid no property taxes, younger people and lower income people were more likely to answer that they didn’t know enough. Since these people usually do not pay property taxes directly, they may ignore news reports about property taxes. Property taxpayers, older people and higher income people were more likely to agree that the assessment system is unfair.

Business Tax Breaks. Indiana residents were asked whether they favored or opposed property tax breaks for businesses to encourage firm location or expansion.

60.5% favored business tax breaks for development.
39.5% opposed business tax breaks for development.

There were no significant differences in responses among demographic groups. About three-fifths of all groups favored business tax breaks for development.

Farm Land Assessment. Indiana residents were asked whether they thought that farm land should be assessed on it use value for growing crops, or on its potential sale price including any development potential.

77.3% favored use value assessment based on the value for growing crops.
22.7% favored assessment based on potential sale price.

There were no significant differences among demographic groups. About three-quarters of all groups favored use value assessment.

Tax Breaks for Retired People. Indiana residents were asked whether the houses owned by retired people should be assessed at lower rates than other houses, or whether they should be assessed at the same rate.

56.4% thought retired people’s homes should be taxed at a lower rate.
43.6% thought retired people’s homes should be taxed at the same rate as others.

People with incomes above $50,000 a year were less likely to favor tax breaks for retired people; those with lower incomes were more likely to favor such tax breaks. Perhaps the retired people that upper income people know are more capable of paying property taxes, while those known by lower income people are less able to pay.
Business Property Classification. Indiana residents were asked whether they favored the classification of business property, so that business would be taxed at either a higher or lesser rate than other property owners. Respondents also could answer that all property should be taxed at the same rate.

- 58.8% thought business property should be taxed at a higher rate than other property.
- 38.1% thought that all property should be taxed at the same rate.
- 3.1% thought that business property should be taxed at a lower rate than other property.

There were no significant differences by demographic group. About three-fifths of all groups favored classification with higher assessment ratios and taxes for business property.

Acquisition Based Assessment. Indiana residents were asked to imagine two identical houses, one recently purchased and one purchased years ago at a much lower price. They were asked whether the property should be assessed at its current potential sale price, or at the price the owners originally paid. The former option is current value assessment; the latter option is acquisition based assessment.

- 67.2% favored current value assessment.
- 30.7% favored acquisition based assessment.
- 2.1% gave another answer.

Renters and lower income people were more likely to favor acquisition based assessment; homeowners and higher income people were more likely to favor current value assessment. Perhaps lower income renters are looking forward to purchasing a house some day, and are concerned about the rising property tax burden that could result if their property appreciates.

What Tax to Raise. Indiana residents were asked which tax should be raised in order to reduce property taxes, with the option of answering that property taxes should not be reduced if another tax had to be raised.

- 2.7% favored the individual income tax.
- 20.8% favored the sales tax.
- 25.7% favored the corporate income tax.
- 28.8% favored some combination of taxes.
- 22.0% said property taxes should not be reduced if another tax had to be raised.

There was little difference by demographic group. There was no statistical difference between percentages favoring the sales, corporate, combination or no cut options--each had about a quarter of the respondents. Very few favored raising the individual income tax.
Additional Results. The survey asked a number of other questions relating to property taxes.

75.8% owned their own homes; 19.4% rented; 4.7% lived under some other arrangement. Higher income people were more likely to own their own homes, lower income people to rent.

21.4% paid no property taxes; 47.4% paid between $1 and $1,000; 31.2% paid more than $1,000. Higher income people tended to pay more property taxes, lower income people less.

74.4% believed that taxes should be allocated based on the taxpayer’s ability to pay; 25.6% believed taxes should be allocated based on the taxpayer’s use of government services. This did not differ by demographic group.

Appendix: Methodology For Calculating Tax Burden Shifts

Real Property. Sales disclosure data was matched with property record card data for residential, agricultural, commercial and industrial property. The relationship between assessments under the current true tax value system and sales prices is established using statistical methods. These relationships were expressed as assessment sales ratios, that is, dividing the assessed values by sales prices for each parcel. The median ratio was then found for each county and property type. This median represents a measure of the overall relationship between assessed value and sales price for the county and property type. Inverting this ratio gives a factor, which, when multiplied by total assessed value of a property type, yields an estimate of the market value of that property type.

A use value formula was developed for farm land, based on the formula used in many other states. The numerator estimates farm income per acre by multiplying Indiana average corn yield by the market average corn price, then by the land’s productivity index. Costs as calculated by agricultural economists are subtracted to give net income. This figure is divided by a rate of return, which is the sum of the Farm Credit Administration long term interest rate and the statewide property tax rate relative to the market value of land and improvements. The result is then adjusted for influence factors. The formula is applied to farm land parcels, summed by county, then divided by existing assessments to derive a use value farm land multiplier.

Personal Property. For depreciable property, data are available from the State Board of Tax Commissioners from 1994 audits summed by industry type. Data include the total acquisition cost for all pools, adjusted cost, true tax value, as well as the breakout of acquisition cost by pool number for the most recent full year. Also available is the calculation of 30% of the true tax value and the maximum of calculated true tax value and the 30% minimum.

Property is distributed by expected life using the industry type breakdown, and information from Ohio on the typical useful life of equipment in each industry. Property is distributed by age based on the record of investment nationally over the past 25 years, and on tables showing the typical pattern of property discards. The result is an estimate of the amount of depreciable personal
property assessments in Indiana by useful life and age.

The depreciable personal property model allows simulation of four policy changes which might be considered movements in the direction of market value under a replacement cost less depreciation method: eliminating the 30% floor, using reputedly more realistic Ohio remaining life rates, disallowing modified accelerated cost recovery in setting equipment lives, and adjusting past acquisitions for inflation. Multipliers are calculated from the model, which, when multiplied by existing personal property assessments, give estimates of assessed value after policy changes.

Inventories are more straightforward. A policy adjustment that might be considered a move in the direction of market value assessment is elimination of the 35% inventory valuation adjustment. The tax board data show that this would increase inventory assessments almost exactly 50%.

Most utility personal property is assessed by the state, with values allocated to counties. In one scenario, utility personal property is assumed to be assessed like other property, with the 30% floor and the 35% inventory adjustment eliminated. The multiplier for utility property is less than one in this case (that is, the assessed value after policy adjustments is less than currently), because little utility personal property is inventories.

The second utility personal property scenario involves “unitary taxation.” Many states assess utilities by estimating the value of the entire company, then allocating a share of this value to the state. The tax board obtained unitary values for some Indiana companies from other states, and, when allocated to Indiana and compared to current assessments, this allowed calculation of multipliers simulating the adoption of unitary taxation. In most counties the multiplier was greater than two, meaning utility personal property assessments would more than double with unitary taxation.

Calculation of Tax Burden Shifts. Gross assessed values by property type were summed from property record card parcel information. This is done twice in each county, for tax districts in incorporated cities or towns, and for tax districts in unincorporated districts. This is done because property types are not distributed proportionately among incorporated and unincorporated county areas. In particular, most farm land is in unincorporated areas. Since unincorporated areas have generally lower tax rates, farm land owners pay a smaller share of the tax levy than their county-wide share of assessed value would imply. Deductions are divided into real and personal residential and business categories, then subtracted from gross assessments. The net tax rate is then multiplied by the net assessed values in each property category, and the district results are summed, to estimate the part of the levy paid by owners of each property type.

Gross assessed values by property type are then multiplied by the appropriate multipliers to give estimates of market value. Deductions are again subtracted. The dollar value of business deductions is adjusted upward, since so many are calculated as a percentage of assessed value. The dollar value of residential deductions is not adjusted, since most are denominated in dollar amounts. The incorporated and unincorporated area levies are divided by the respective total net assessed values to derive two district tax rates. These rates are multiplied by the net assessments
of each property type, and the district results summed, to give the part of the levy paid by each property type under market value assessment.

The percentage change in the levies from the true tax value to market value systems by property type show the tax burden shifts.