

POLICY BRIEF

The Relative Tax Burden on Indiana's Business

A Micro-Simulation of State Tax Liabilities

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INTRODUCTION

One characteristic of a successful system of taxation is equity, which consists of taxing similar activities in a like manner and rate. This study seeks to evaluate the equity of Indiana's system of taxes levied on businesses. While there are other criteria of successful tax schemes (such as adequacy, efficiency, stability, and neutrality), these criteria are often in conflict; this is one reason for the complexity of tax systems. However, equity in taxation is a criterion that influences much policy concern among citizens and is worthy of deeper exploration.

To complete this study, we first generally explain our approach and identify its major shortcomings and strengths. We do so not to advance the methodology, but in sufficient detail to permit replication of our work. This is followed by an outline of our findings, which includes a detailed comparison of tax liabilities on Indiana businesses of different types. We end with a discussion for further research and some policy considerations.

OUR APPROACH: METHODOLOGY AND DOCUMENTATION

A common method of comparing tax effects across differing individuals, households, or firms is through the use of a micro-simulation. The purpose of a microsimulation is to create firms that are nearly identical in some characteristic (e.g. their revenues). This type of study is performed by creating 'representative' firms in Indiana that vary by size, legal structure, and industry. In this way, we can compare the relative tax burden across these characteristics by



applying the appropriate taxes to each firm. The point of this is to compare simply the taxation of similar economic activity, and evaluate equity.

We began by selecting representative industries of manufacturing, retail, financial institutions, health care sector, food services, farming, and personal service corporations. The purpose in choosing these industries was to select firms that are subject to different state business taxes. A further benefit of this is that for a given level of revenue, industrial differences in firms lead to differing mixes of capital and workers and different rates of profit. This range in capital (real estate or business equipment), workers, and profitability affect total tax collections because labor, capital, and profit are taxed at different rates. This provided the groundwork for examining the impact of state taxes on these firms. We then chose to create a representative firm in each of these industries.

OUR MICRO-SIMULATION MODELS

To construct our model, we chose to compare firms with \$1 million, \$10 million, and \$100 million in annual revenue. This provided a basis for estimating the number of employees, payroll, value of plant and equipment, and profits against which to apply taxes in our simulation.

The major business tax instruments of interest in Indiana are income taxes (and corporate net income taxes), property taxes (real and personal), and sales taxes. There are also local taxes such as wheel tax, hotel/motel tax, food and beverage tax, alcoholic beverage tax and local option income taxes, which we did not analyze. Federal taxes treat firms differently, which is an issue outside the scope of this study.

Using data from Hoover's database on firm sales and employment, we selected a small sample of firms in our representative industry with sales reported at the \$1 million, \$10 million, and \$100 million level. From this sample we immediately omitted firms that could not appropriately be represented within these ranges. Manufacturing and health care at \$1 million were omitted because firms of this size in these industries are rare. Likewise, food and farm services at \$100 million were omitted as these revenue levels were not plausible for a single establishment in either industry.

From our small samples we derived representations of the labor force and capital structure of representative firms from existing estimates or directly from available data. For our labor estimate, we calculated the mean number of employees from ten firms in each industry and revenue size category. This provided employment, wages, and total sales against which some taxes may be levied. This left us with the need to estimate both capital structure (for property taxes) and profits (for income taxes).

Using a Cobb-Douglas estimate of capital labor ratios in different sectors, we calculated total capital for each industry at each revenue level.^[1] Then using the 2010 Indiana Handbook of Taxes, Revenues, and Appropriations, we calculated the percentage of real to personal property by industry type. We then applied these calculations to estimate personal and real property by industry type and revenue size. We assumed that 80 percent of real property is buildings. This means that the remaining 20 percent is non-depreciating land.^[2] We depreciated the buildings and personal property at 40 percent.^[3] From this we summed the depreciated property and the land to equate to the total amount of taxable property for each firm and industry. This permits estimates of property tax liability for the representative firms in this micro-simulation.

In order to estimate taxable income, we calculated individual profits for each establishment by applying the industry level profit ratio to total revenues (as reported across 2010 SEC filings by money.cnn. com). This provides as strong an approximation of net revenue as is possible for firms not filing SEC statements and a strong example of profitability across the represented firms in this micro-simulation.

This process permits us to test for differences in major state taxes' liabilities across industry type and firm size. However, firms in Indiana are also taxed differently depending upon their organizational form. Our total tax burden also varies across the type of taxes paid by public corporations and other firms (e.g. corporations vs. LLCs). This allows us to use micro-simulation to study the tax effects across each of the tax categories that apply to Indiana businesses. This is especially relevant because some firms of the same size might have different organizational forms; hence, two otherwise identical businesses might have different tax rates based solely on their form of legal organization. We review each of the tax instruments below.

BUSINESS TAXES IN INDIANA

The following are the main business tax types in Indiana.

Income Taxes: Derived by assessing estimated income against Indiana's income tax rate (individual for LLCs, corporate net for corporations) as reported in the 2010 *Indiana Handbook of Taxes, Revenues, and Appropriations.* In Indiana, the corporate tax rate and the rate for financial institutions are 8.5 percent. ^[4]

Personal and Real Property Taxes: Effective tax rate of 2 percent applied to estimates of taxable property. This rate is the unweighted average district rate for businesses and all other property.

Sales Tax: For firms that are subject to sales tax, we assessed sales tax rate of 7 percent against all revenue. This included retail firms and food service firms.

Total Taxes: We taxed all firms that could logically be a corporation, LLC, and not-for-profit, accordingly. The corporation tax structure was the base case or calculated as stated above. For the LLCs, we adjusted the income tax rate from 8.5 percent to 3.4 percent reflecting the personal state income tax rate. For not-for-profits, we simply reduced all tax rates to 0 percent. The not-for-profit firm structure was only applicable to financial institutions and the health care sector.^[5]

^{1.} See Roberto Piazza. 2010. "Estimate the Capital Labor Ratio in Different Sectors." Manuscript.

^{2.} This was based on information from the Indiana Tax Handbook property tax section that includes information on net assessed value by property class.

^{3.} In an aggregate study it is difficult to find information on the amount of property depreciated. As such, we used a conservative estimate of 40% to depreciate the property to find the taxable basis of the property.

^{4.} Corporate income tax rate will be gradually declining to 6.5% by June 2015.

^{5.} In these cases, the corporate profits reported by like activities would be deployed by the firm elsewhere.

Tax Incidence: The entity who administratively collects or pays an individual tax is not necessarily the entity who pays the tax economically. For example, sales taxes are collected by firms, but usually charged to consumers at the point of sale. However, businesses routinely price to account for the tax, and the actual incidence of the tax varies by the relative elasticity of firm supply and consumer demand. This varies by product and region and cannot be fully assessed here. The incidence of taxation varies for all taxes, not simply sales taxes. For the purposes of this study, we assess the incidence of tax to the organization remitting the tax to the state of Indiana.

OUR FINDINGS

Table 1 includes the Indiana tax rates used in this study to determine the total tax liability for each representative firm. We note that the corporate income tax and financial institution tax are assessed at the same nominal rate, but experience different deductions and credits. Also, withholding for state personal income tax is applied at 3.4 percent for all tax paying firms. The effective property tax and sales tax are the same for all applicable firms.

In our comparison of tax equity, it is clear that statewide, three factors matter: industry, firm size, and organizational structure. For firms of equal size (as measured by revenues), industry level variability in profitability, number of employees, amount of real and personal property, and applicable sales tax alters the effective tax rate.

After comparing the firms at different revenue levels for the different industries, the tax differentials are significant relevant to the size of the firm (see Appendix for simulation details). The effective tax rate for a farm is 2.16 percent compared to 3.99 percent for a personal service corporation. This difference of 1.83 percent is significant and based solely on the firms operating in different industries. Food services are taxed at the highest effective tax rate without sales tax at 4.12 percent. This is mainly due to a higher payroll tax expense and greater amounts of property. TABLE 1: State Tax Rates Used, 2011

Tax Categories	Corporation	Financial Instituion	LLC	Not-for-Profit
Income Tax Rates	8.5%	8.5%	3.4%	0.0%
Personal Income Tax Rate	3.4%	3.4%	3.4%	0.0%
Effective Property Tax Rate	2.0%	2.0%	2.0%	2.0%
Sales Tax	7.0%	7.0%	7.0%	7.0%

TABLE 2: Summary Table, Effective Tax Rate of Business in Indiana

	Corporation			LLC		
Industry	\$1 Million	\$10 Million	\$100 Million	\$1 Million	\$10 Million	\$100 Million
Farming	2.16%	2.00%		2.11%	1.95%	
Manufacturing		3.81%	3.25%		3.44%	2.88%
Retail (with sales tax)	9.47%	9.45%	8.57%	9.27%	9.26%	8.37%
Retail (without sales tax)	2.47%	2.45%	1.57%	2.27%	2.26%	1.37%
Financial Institution	3.57%	2.79%	2.57%	3.07%	2.29%	2.06%
Food Services (with sales tax)	11.12%	11.12%		10.72%	10.72%	
Food Services (without sales tax)	4.12%	4.12%		3.72%	3.72%	
Personal Service Corp.	3.99%	3.28%	3.03%	3.48%	2.78%	2.52%
Health Care		7.46%	5.31%		7.14%	4.99%

At \$10 million the different firms vary in the amount and structure of their tax dollars. Health care is subjected to the highest amount of taxes at \$746,000 annually compared to \$260,000 for financial institutions and \$328,000 for personal service corporations (see Appendix). If sales tax is included in the analysis, retail firms pay the most in taxes at \$945,000. This equates to approximately 9 percent of revenue.

Our largest firms, with revenues of \$100 million, experienced the greatest tax differentials by industry. Health care corporations pay \$5.3 million in taxes, while a retail firm only pays \$1.5 million, sales tax. If sales tax is included, retail firms pay \$8.5 million. Manufacturing firms owe taxes of \$3.2 million, and personal services corporations owe taxes of \$3 million; the tax differences between manufacturing and personal service corporations are minimal.

We also make a comparison across firms by organizational types. Here, we examine LLCs, which are taxed at the personal income tax rate. The differences across firms are more heavily influenced by the amount of real and personal property than income because income is taxed at the reduced rate of 3.4 percent. Next, we compared the differences amongst different organization types in the same industry. For farms, the organizational structure did not have a significant bearing on taxes payable. This is due to the extremely low profit ratio. For manufacturing, organizational structure had a great influence on total taxes payable and had a more significant impact at \$10 million and \$100 million ranges. At \$10 million in revenues, the corporation paid almost \$40,000 more than an LLC was required to pay. At \$100 million, the corporation paid almost \$370,000 more in taxes than the LLC. These results also paint a fairly clear picture of the regressivity of the states' overall business taxes where, almost uniformly, larger businesses pay a smaller share of total revenue in state taxes.

SUMMARY AND CONCLUSIONS

This study constructed a micro-simulation of Indiana firms by industry, size, and organizational structure. We find widespread and significant differences in the effective tax rate paid by businesses across industry, size, and the legal structure of the firm. This potentially distorts the behavior, size, and location decision of firms.



FIGURE 1: Summary Table, Effective Tax Rate of Business in Indiana

For example, Wal-Mart is organized as an LLC in Indiana and is therefore subjected to the lower LLC tax rate (income) rather than the corporate rate. In contrast, Eli Lilly and Co. is organized as a corporation in Indiana and must pay taxes at the higher corporate tax rate. This tax rate is an inequity affecting Indiana corporations rather than out-of-state companies with facilities in Indiana. These types of inequities motivate additional research and policy considerations.

Because there are different tax rates applied to businesses that vary only with size, line of business, or organizational form, this necessarily motivates firm and industry level variability in employment, profitability, and location choice. Estimating the aggregate effects of these factors on Indiana employment and location decision of a business investment offers a clear additional research path. In addition, this study has treated tax incidence simply. A fuller treatment of tax incidence in this setting would better frame questions surrounding the tax liability of Indiana residents based upon their occupations and ownership stake in firms. Further, the dynamic effects of recent and pending changes in marginal tax rates offers a

continuing opportunity for research.

In addition to the fundamental research questions, considerations for public policy are also relevant. Among these considerations are the role in tax rate differentials based upon incidence and industry as an appropriate role for state government. In other words, does the government wish to tax \$10 million revenues differently based upon the type of industry involved?

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Appendix

TABLE 1:	Corporations	by Organiz	ational Struct	ture at \$1 Mi	llion in Revenues
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	Farming	Financial Institution	Food Services	Retail	Personal Service Corp.
Revenue	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Profitability Ratio	1.0%	9.9%	7.9%	3.8%	9.9%
Taxable Income	\$10,000	\$99,000	\$79,000	\$38,000	\$99,000
Tax Rate	8.5%	8.5%	8.5%	8.5%	8.5%
Income Taxes	\$850	\$8,415	\$6,715	\$3,230	\$8,415
Number of Employees	15	9	36	10	14
Avg. Compensation/Employee	\$5,843	\$44,658	\$14,097	\$23,793	\$39,207
Total Payroll Expense	\$85,019	\$419,240	\$511,261	\$245,959	\$541,054
Personal Income Tax	3.4%	3.4%	3.4%	3.4%	3.4%
Payroll Taxes	\$2,891	\$14,254	\$17,383	\$8,363	\$18,396
Total Property	\$894,543	\$653,789	\$855,092	\$653,789	\$653,789
Effective Property Tax Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Property Taxes	\$17,891	\$13,076	\$17,102	\$13,076	\$13,076
Total Sales			\$1,000,000	\$1,000,000	
Sales Tax Rate			7.0%	7.0%	
Sales Taxes			\$70,000	\$70,000	
TOTAL TAX	\$21,632	\$35,745	\$111,200	\$94,668	\$39,887
TAX WITHOUT SALES			\$41,200	\$24,668	
Total Effective Tax Rate	2.16%	3.57%	11.12%	9.47%	3.99%
Total Effective Tax Rate Without Sales Tax			4.12%	2.47%	

TABLE 2: Corporations by Organizational Structure at \$10 Million in Revenues

	Farming	Financial Institution	Food Services	Health Care Sector	Manufacturing	Personal Service Corp.	Retail
Revenue	\$10,000,000	\$10,000,000	\$10,000,000	\$10,000,000	\$10,000,000	\$10,000,000	\$10,000,000
Profitability Ratio		9.9%	7.9%	6.2%	7.2%	9.9%	3.8%
Taxable Income	\$0	\$990,000	\$790,000	\$620,000	\$720,000	\$990,000	\$380,000
Tax Rate	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%
Income Taxes	\$0	\$84,150	\$67,150	\$52,700	\$61,200	\$84,150	\$32,300
Number of Employees	86	51	398	195	67	95	118
Avg. Compensation/Employee	\$5,843	\$44658	\$14097	\$43774	\$68,761	\$39207	\$23793
Total Payroll Expense	\$501,166	\$2,280,796	\$5,615,214	\$8,554,254	\$4,635,703	\$3,709,007	\$2,803,067
Personal Income Tax	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%
Payroll Taxes	\$17,040	\$77,547	\$190,917	\$290,845	\$157,614	\$126,106	\$95,304
Total Property	\$16,634,982	\$11,049,322	\$14,451,415	\$37,724,552	\$8,087,589	\$11,049,322	\$11,049,322
Effective Tax Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Property Taxes	\$332,700	\$220,986	\$289,028	\$754,491	\$161,752	\$220,986	\$220,986
Total Sales			\$10,000,000				\$10,000,000
Sales Tax Rate			1.0%				7.0%
Sales Taxes			\$100,000				\$700,000
TOTAL TAX	\$349,739	\$382,683	\$647,096	\$1,098,036	\$380,566	\$431,243	\$1,048,591
TAX WITHOUT SALES			\$547,096				\$348,591
Total Effective Tax Rate	2.0%	2.79%	11.12%	7.46%	3.81%	3.28%	9.45%

TABLE 3: C	Corporations b	y Organizational	Structure at \$100	Million in Revenu	es
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	Financial Institution	Health Care	Manufacturing	Personal Service Corp.	Retail
Revenue	\$100,000,000	\$100,000,000	\$100,000,000	\$100,000,000	\$100,000,000
Profitability Ratio	9.9%	6.2%	7.2%	9.9%	3.8%
Taxable Income	\$9,900,000	\$6,200,000	\$7,200,000	\$9,900,000	\$3,800,000
Tax Rate	8.5%	8.5%	8.5%	8.5%	8.5%
Income Taxes	\$841,500	\$527,000	\$612,000	\$841,500	\$323,000
Number of Employees	362	511	435	758	84
Avg. Compensation/Employee	\$44,658	\$43,774	\$68,761	\$39,207	\$23,793
Total Payroll Expense	\$16,163,745	\$22,358,804	\$29,899,317	\$29,727,856	\$1,997,110
Personal Income Tax	3.4%	3.4%	3.4%	3.4%	3.4%
Payroll Taxes	\$549,567	\$760,199	\$1,016,577	\$1,010,747	\$67,902
Total Property	\$58,875,423	\$201,012,245	\$80,875,889	\$58,875,423	\$58,875,423
Effective Tax Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Property Taxes	\$1,177,508	\$4,020,245	\$1,617,518	\$1,177,508	\$1,177,508
Total Sales					\$100,000,000
Sales Tax Rate					7.0%
Sales Taxes					\$7,000,000
TOTAL TAX	\$2,568,410	\$5,307,444	\$3,246,095	\$3,029,756	\$8,568,410
TAX WITHOUT SALES					\$1,568,410
Total Effective Tax Rate	2.57%	5.31%	3.25%	3.03%	8.57%

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Hilary Fichter is an audit associate and a recent graduate of Ball State University. She graduated Magna Cum Laude from the Ball State University Honors College and the Miller College of Business Honors Program with majors in accounting and finance. She worked for three years at the Center for Business and Economic Research as a student research assistant. She served as a member of Beta Alpha Psi and Beta Gamma Sigma honorary societies and was actively involved in Alpha Kappa Psi business fraternity. Fichter completed an audit internship with Ernst & Young in Indianapolis, IN.



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