State Apportionment of Global Intangible Low-Taxed Income: Additional Information

March 2, 2020

Contact:
Policy-PWBM@wharton.upenn.edu

Summary

On February 25, 2020, PWBM issued projections of Global Intangible Low-Taxed Income (GILTI) and the amount apportioned to Massachusetts over the 10-year period from 2021 to 2030. This note provides additional information about the data and methodology used to apportion PWBM's estimate of GILTI for all U.S. corporations to Massachusetts.

Data and Methodology

Data on state apportionment of multistate corporations' income is generally not publicly available. PWBM therefore estimates state corporate tax apportionment factors based on an approach developed by the former U.S. Advisory Commission on Intergovernmental Relations (ACIR).[1] However, PWBM extends and refines the ACIR method using additional and more detailed data sources.

The ACIR method uses the industry composition of state income and product to distribute industry-level national aggregates across states. Following this approach, PWBM estimates each state's share of sales, payroll, and property by industry using data published by the Bureau of Economic Analysis (BEA). These shares are then used to apportion each industry's taxable income across states.

Sales: To estimate the state distribution of an industry's sales, PWBM uses the Input-Output Accounts to calculate the share of its output sold to each other industry as intermediate inputs and the share sold for final use (such as consumption). Sales for intermediate use are allocated to states based on their share of the purchasing industry's total output. Sales for final use are allocated to states based on their share total U.S. output.

Payroll: PWBM estimates the state distribution of each industry's payroll using wages and salaries by state and industry from the Regional Economic Accounts.

Property: To estimate the state distribution of real and tangible personal property, PWBM uses data from the Fixed Asset Accounts to calculate the ratio of the value of business equipment and structures to GDP by industry. The value of property in each state is then imputed using these ratios and the industry composition of state GDP.[2]

---

[1] See Dubin, Elliott (2010). *Changes in State Corporate Tax Apportionment Formulas and Tax Bases*. State Tax Notes, February 22, 2010. Available here (pdf).

[2] The original ACIR method does not include a separate estimate of the property factor and instead assumes that property follows the same distribution as payroll and double-weights the payroll factor.

Limitations

PWBM's apportionment estimates reflect the limitations of the available data and are subject to considerable uncertainty. Most significantly, the BEA data used to estimate apportionment factors are not limited in scope to corporations. They include all businesses and, in some cases, non-business entities (such as nonprofit institutions) as well. In addition, the ACIR approach assumes that all corporations in the same industry are similar to the national average for that industry, regardless of the state in which they operate. If businesses in the same industry differ systematically across states – in terms of either the share of business activity attributable to corporations or the characteristics of corporations in the industry – PWBM's apportionment estimates may be distorted.

In general, state apportionment factors cannot be applied directly to federal tax liability or federal taxable income to obtain state-level estimates. While most states with a corporate income tax use federal rules and definitions as a starting point, differences are common. For instance, most states provide a tax credit for research and development activities performed in the state. Many states also use a different definition of taxable income than the federal tax code, often modifying the treatment of net operating loss carryforwards or rules for depreciating investment, for example. These differences mean that federal taxable income or liability cannot be apportioned directly to states without accounting for idiosyncratic features of each state's corporate tax code.

Table 1. Apportionment factors for Massachusetts, 2017

Percent

Industry	Sales	Payroll	Property
Accommodation and food services	2.85	2.62	2.45
Administration, support, and waste management	2.93	2.35	2.71
Agriculture, forestry, fishing, and hunting	1.64	0.79	0.27
Broadcasting and telecommunications	2.67	2.28	1.64
Chemical manufacturing	2.63	2.39	2.66
Computer and electronic product manufacturing	2.75	5.58	5.65
Construction	2.75	2.71	2.49
Data processing, hosting, and other information services	2.93	2.79	2.76
Depository credit intermediation (banking)	2.92	2.71	2.45
Electrical equipment, appliance, and component manufacturing	2.55	2.63	2.45
Fabricated metal product manufacturing	2.25	2.77	3.45
Finance, except depository institutions	2.69	6.15	4.91
Food, beverage, and tobacco manufacturing	2.50	1.68	1.10
Furniture and related product manufacturing	2.71	1.22	1.30
Health care and social assistance	2.80	3.59	3.96
Insurance carriers and related activities	2.84	3.35	2.86
Machinery manufacturing	2.45	1.89	1.43
Management of nonbank companies and enterprises	2.61	3.19	3.19
Miscellaneous manufacturing	2.87	4.42	5.95
Miscellaneous services	2.76	3.80	4.16
Motion picture and sound recording industries	2.39	0.86	0.86

Continued...

Table 1 (continued). Apportionment factors for Massachusetts, 2017

Percent

Industry	Sales	Payroll	Property
Motor vehicles, bodies and trailers, and parts manufacturing	2.21	*	0.16
Nonmetallic mineral product manufacturing	2.30	1.57	1.23
Oil and gas extraction	1.21	*	*
Other mining	2.28	0.15	0.32
Other transportation equipment manufacturing	2.54	*	1.28
Paper manufacturing	2.29	2.18	1.38
Petroleum and coal products manufacturing	2.44	0.68	0.38
Plastics and rubber products manufacturing	2.29	2.08	1.92
Primary metal manufacturing	1.87	0.74	0.58
Printing and related support activities	3.03	3.23	3.09
Professional, scientific, and technical services	2.90	4.75	4.88
Publishing industries	2.90	6.54	6.32
Real estate and rental and leasing	2.81	2.83	3.05
Retail trade	2.68	2.35	1.98
Textiles, apparel, and leather product manufacturing	2.60	2.91	2.72
Transportation and warehousing	2.36	1.68	1.12
Utilities	2.63	2.35	2.17
Wholesale trade	2.25	2.69	2.31
Wood product manufacturing	2.13	0.73	0.52

* = < 0.01% or missing data.

Sales factor = state share of industry's total sales on a destination basis.

Payroll factor = state share of industry's total wage and salary accruals.

Property factor = state share of industry's total net stock of equipment and structures.