

Chapter 1

The Washington Input-Output Tables

The 1997 Washington State Input-Output (I-O) Study produced two I-O tables for the state: one with industrial sectors defined by the Standard Industrial Classification (SIC) and the other by the North American Industrial Classification System (NAICS). The SIC-based Table contains 38 industrial sectors and 6 final demand categories (personal consumption expenditures, exports to the rest of U.S. and to foreign countries, investment, and federal government spending and local government expenditures). The NAICS-based Table contains 39 industrial sectors and the same number of final demand sectors.

The two tables can be downloaded through the following link:

[1997 Washington Input-Output Tables \(SIC-Based and NAICS-Based\)](#)

For illustrative purpose, a highly aggregated version of the 1997 Washington I-O table is shown in Table 1-1 below. Except for its lack of sector details, this table is the same as the original SIC-based table. The table identifies three industry groupings (natural resources, manufacturing, and services and trade), three final demand sectors, a final payment sector (total of labor earnings and other value added), and imports. For simplicity, construction is included in “Trade and Services”, even though construction is generally considered a production, not service industry.

Table 1-1
Aggregate 1997 Washington Input-Output Table

<i>(\$Million)</i>	Resources	Manufacturing	Trade & Services	Personal Consumption	Other Final Demand	Exports	<i>Total Output</i>
Resources	728	3,114	350	610	132	2,051	6,985
Manufacturing	409	7,624	6,737	4,603	6,060	56,121	81,554
Trade & Services	1,008	9,159	43,949	64,331	20,786	46,631	185,865
Value Added	3,999	23,036	111,894	13,819	22,495	0	175,242
Labor Earnings	2,112	18,284	68,789	0	18,086	0	107,271
Imports	840	38,620	22,936	37,937	14,635	0	114,968
Total Input	6,985	81,554	185,865	121,300	64,108	104,802	564,613

The input-output table can be divided into three principal components, each of which consists of a set of rows and columns:

- The first component is the inter-industry transactions -- the shaded part of Table 1-1. Estimates in this block show the flow of goods and services that are both produced and consumed among the state's industries. Another name for these transactions is “intermediate demand”, meaning that industries purchase these inputs for the purpose of transforming them into a different product or service for subsequent sales.

- The second component contains the final demand sectors – the double-line bordered part of Table 1-1. Transactions in this block of the table represent the sales by industry to "ultimate" consumers -- households, the capital goods sector (i.e., investment), governments, and markets outside the state (i.e., exports). These final demand sectors purchase output from the producing sectors, not for the purpose of further production or resale, but rather for final consumption or use.
- The third component of the table contains the payments to the basic factors of production -- labor, capital, and land. These are so-called the "value added". Also included are the purchases of imported goods and services. The block bordered by shaded lines in Table 1-1 represents this component.

The Input-Output Table: A Comprehensive Description of the Washington Economy

The Input-Output table constitutes a detailed set of accounts on all economic activities within the state; it portrays the flow of commodities between producing sectors and consuming sectors. The Table thus provides a complete description of the state economy at a point in time – 1997.

Each row in the Table shows the production and sales of an industry to all industries within the state and to final demand. For example, in 1997, Washington manufacturing industries' total output (sales) amounted to \$81,554 million. More than two-thirds of this output, valued \$56,121 million, were exported; and only 13 percent were sold to in-state final demand. In contrast, output of trade and services industries totaled \$185,865 million, more than double that of manufacturing; but only one-fourth of the total output were exported, while 46 percent or \$85,117 million of this output were used by in-state final demand.

Each column shows an industry's purchases of goods or services from own or other industries in the state, from factors of production including labor, land, capital, and tax payments to government. Total imports from other regions in the U.S. or from overseas are a part of an industry's purchases for use in its production process. Table 1-1 shows that, in 1997, \$38,620 million or 47 percent of total purchases by Washington manufacturing industries for their production use were imported. In comparison, the more "local" trade and services industries imported a much smaller amount, or 12 percent, of their total purchases.

The sum of a row is the total output of an industrial sector. The sum of a column is the total inputs of an industrial sector. The basic accounting rule dictates that for each industry the row total (i.e. total output or sales) equals the corresponding column total (i.e. total inputs or purchases).

The Input-Output Tables: Measuring Changes in the State’s Economic Structure Over Time

With a series of comparable historical tables available for Washington (i.e. 1963, 1967, 1972, 1982, 1987, and 1997), changes in the structure of the economy over time can be observed. However, this needs to be done with reference to the particular prevailing cyclical situation each Table reflects. For example, 1987 and 1997 were relatively comparable years of economic expansions in Washington, while 1982 and 1972 were years when severe contractions took place. Table 1-2 shows the changing “openness”, or shifts in imports and exports, of the Washington economy over the 1972-1997 period.

Table 1-2
Changing Importance of Washington External Trades, 1972-1997

	% Outputs Exported All Sectors	% Inputs Imported		
		All Sectors	Manufacturing	Service & Trade
1972	16.8%	17.8%	31.2%	10.3%
1982	18.0%	19.8%	39.1%	12.8%
1987	18.0%	18.1%	40.2%	12.5%
1997	18.6%	20.4%	47.4%	12.3%

Exports as a share of total gross state output during the 1972-82 period increased from 16.8 percent to 18.0 percent, but then changed little between 1982 and 1997. Part of the reason for a low export share in 1972 might have to do with the severe U.S. cyclical downturn depressing the state’s export markets. After a jump in the 1970s, imports as a share of production inputs remained steady for the state’s services and trade industries. For manufacturing industries in the state, the import share of production inputs rose significantly and continuously, reaching 47 percent in 1997.

More detailed analyses can be conducted, at the individual industry level, on the shifting patterns of exports to other regions in the U.S. and to overseas markets, or on the changes in imports from the rest of U.S. as opposed to from foreign producers.