The Collection and Description of Washington State Export Data

WASHINGTON STATE UNIVERSITY EXTENSION FACT SHEET • FS006E

Abstract

The data documenting the value of exported goods originating from Washington State are subject to particular collection issues that are important for analysts, policy-makers, business owners, and interested lay audiences to consider before drawing conclusions. This document explains the classifications, collection methods, and economic factors that influence the interpretation of Washington State export data to avoid faulty analysis. The issues include 1) not counting services, 2) a confounding rule for determining which state an export is from, 3) including inland freight costs, and 4) crediting port states with exports at the expense of inland states.

Introduction

Except under extremely rare circumstances, the data reporting exports from Washington State to any country in the world (other than the United States) come from the Origin of Movement (OM) series. This data series is unique data on exports from all U.S. states to foreign countries and other foreign destinations. The information is compiled by the Foreign Trade Division of the U.S. Census Bureau, and is a state-by-state disaggregation of the official export data of the United States. The key features of this data are its coverage by state, destination country, industrial subsector, and year. For example, the value of exports from Washington to Japan in transportation equipment for 2005 is provided. This kind of information is crucial for documenting state patterns of trade, learning about the export markets that Washington businesses serve, and determining the effectiveness of state trade policy.

Because of the collection methods, the export data by state are *not* intended to report the value of exports produced in Washington. Rather, the way the data are collected causes them to inform about the value of exports whose origin of movement began in Washington (hence the name of the data series). For example, if a good was manufactured in another state and shipped to Washington by a Washington wholesaler or freight forwarder who then sells the good abroad, the state of origin of movement would be reported as Washington, the location of the freight forwarder.

This difference between the state of origin of export movement and the state of export production means the Washington State export data cannot be used directly to calculate how much employment or income in Washington is due to international trade, nor to indicate which foreign countries are the best potential markets for any particular Washington firm to export to. Realizing this is crucial to avoid unsubstantiated inferences about global sales or related statistics during policy analysis. Though not all current analyses misinterpret Washington State's export data, this possibility is great enough to justify a clear exposition of the factors that influence the recording of these numbers to guide a general audience of marketers, business owners, and government officials.

Though there may be ways the U.S. Census Bureau could change their export data collection procedures to release state export data that have wider uses than the current OM data, these possibilities are outside the scope of this report. Instead, the intent is to inform readers about how to properly interpret the Washington State export data that are currently collected and available.

How Exports Are Attributed to States

Data Description

The OM data detail the value of exports from 54 "states" (all 50 U.S. states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and "unknown") to 242 foreign destinations. In most cases these destinations are countries, but territories and other claimed land are often included. The data begin in 1987 and are published quarterly and annually through the present.

The value of exports in the data is the nominal (not adjusted for inflation) sales price of the export as recorded by the exporting firm. If the export has not been sold, the value is its cost as it sits in inventory or at the port of exit, which includes inland freight costs and insurance, but not loading or international transportation fees.

In addition to giving the value of exports from each state to each country per year, the OM data also provide export information by industrial subsectors. The United States classifies industries according to the similarity of the production process used to make the output. (This differs from a product classification system that organizes output by the similarity of how that output is used.) This production-based cataloging is known as the North American Industry Classification System (NAICS), a hierarchical categorization with six levels of increasing detail. The OM data are reported at the third level of detail where industrial subsectors such as "agricultural production" (NAICS 111), "food manufacturing" (NAICS 311), and "merchant wholesalers, nondurable goods" (NAICS 424) are listed. The NAICS classification system began in 1997; for OM data before 1997, the data are available using the Standard Industrial Classification (SIC) system, and are reported at the second (of four) level(s) of detail.

The OM series contains information on state exports for 32 of 99 subsectors (Table 1). The unreported subsectors include output that is hard to physically export such as "professional, scientific, and technical services" (NAICS 541). Consequently, the OM data do *not* report exports from services, the category that contributes the most economic value to the economy.

With NAICS, the Census Bureau counts any good as manufactured if it experienced any kind of processing. For example, freezing a fresh fish puts that good into NAICS 311712 underneath manufacturing code 31. The same applies to agricultural products. Therefore, finding the total apple exports from Washington requires looking in both agricultural products for unprocessed apple exports and manufacturing products for processed apple exports.

The OM data account for all exports whose value is greater than $2500 unless the shipment is of munitions or other specified goods related to national security. Any export with a value less than $2500 is counted separately in a special "low-value exports" category.

The OM data are unique in that no other state export data list the destination country of the exports. Currently the OM data are available at both ZIP code and state levels. Different exporter location (EL) data published by the Census Bureau for each state were discontinued in 2002 because of well-known measurement errors. This EL data should not be used for economic analysis.

The Census Bureau makes the OM data available only through third party vendors such as the World Institute for Strategic Economic Research (http://www.wisertrade.org) and Global Trade Information Services (http://www.gtis.com). These vendors typically charge several hundred dollars for access to one year of export data on all states, all destinations, and all industries. Limited amounts of OM data, such as what pertains to only one state or one industry, are available free from Trade Stats Express (http://tse.export.gov).

Data Collection

When an international shipment is intended, the exporter, by law, must fill out a form called the Shipper's Export Declaration (SED) indicating the contents, value, and state of origin of movement, among other details. An official with U.S. Customs and Border Protection at the port of exit records the SED information immediately before the shipment leaves the country, and then gives the information to the Census Bureau for compilation and reporting. The SED was formerly a piece of paper attached to the shipment, but now the SED must be submitted electronically through what is known as the Automated Export System. The most recent revision to the law describing foreign trade regulations occurred in 2008. Details may be found at http://www.census.gov/foreign-trade/regulations/regs/regulations20080602-federalregister.pdf.

The SED defines an exporter as the seller of the commodity or the United States principal party in interest (USPPI). The USPPI does not have to be an American firm. A foreigner located in the United States exporting to another country would need to complete an SED. A shipment is defined as "all merchandize [sic] sent from one USPPI to one foreign consignee, to a single country of ultimate destination, on a single carrier on the same day" (U.S. Census Bureau, 2002). Single carrier means each truck, railcar, ship, or airplane. The data only record the first international transaction of the shipment. The OM data do not record transactions of the foreign purchaser reselling the shipment. If a shipment contains more than one commodity valued over $2500, each commodity must be declared separately in the SED.

Exporters need to complete the SED when exporting to every country except Canada. Instead, the United States uses Canada's data on imports. The U.S. Census Bureau takes the Canadian import data and converts the values into American dollars. The Census Bureau warns that OM data for Canada prior to 1990 cannot be used with data after 1990 because of a change in data collection methods.

No information obtained from the SED is shared by the Census Bureau with other agencies, including the Internal Revenue Service, so there is no reason for the

Table 1. Product descriptions in the OM data.

NAICS	SIC	Description
111	1	Agricultural products
112	2	Livestock and livestock products
113	8	Forestry products, NESOI[a]
114	9	Fish, fresh, chilled or frozen and other marine products
211	13	Oil and gas
212	10,12,14	Minerals and ores
311	20	Food and kindred products
312	20,21	Beverages and tobacco products
313	22	Textiles and fabric
314	22,23	Textile mill products
315	22,23	Apparel and accessories
316	31	Leather and allied products
321	24	Wood products
322	26	Paper
323	27	Printing, publishing, and similar products
324	29	Petroleum and coal products
325	28	Chemical
326	30	Plastics and rubber products
327	32	Nonmetallic mineral products
331	33	Primary metal manufacturing
332	34,35	Fabricated metal products, NESOI[a]
333	35	Machinery, except electrical
334	35,36,38	Computer and electronic products
335	36	Electrical equipment, appliances, and components
336	37	Transportation equipment
337	25	Furniture and fixtures
339	38,39	Miscellaneous manufactured commodities
511	27	Prepackaged software[b]
910	91	Waste and scrap[c]
920	92	Used or second-hand merchandise[c]
980	93	Goods returned to Canada[c]
990	95,99	Special classification provisions, NESOI[a,c]

Source: These World Institute for Strategic Economic Research (various years) descriptions reflect export goods as opposed to all commodities in the category.
[a]NESOI is a standard acronym for "not elsewhere specified or included."
[b]Prepackaged software is the only tradeable good within 511, Publishing Industries.
[c]These codes do not appear in a regular list of NAICS or SIC published by the Census. The Foreign Trade Division of the Census has created "trade-related" NAICS and SIC to handle such goods.

USPPI to misrepresent information on the form. On the other hand, there is no incentive for the accurate provision of information. Estimates indicate that as many as 50% of SEDs contained one mistake prior to electronic submission (U.S. Census Bureau, 1998). The number of mistakes is thought to have decreased with electronic submission.

Limitations of the State Export Data

The OM data are likely to be misinterpreted along two dimensions if care is not taken. The first kind of misuse, described in Cross-sectional Considerations directly below, is due to not understanding the cross-sectional (or how the data is attributed to states) implications of how the data are collected. In particular, misinterpretation may occur from using the OM data for origin of production of exports purposes rather than origin of movement of exports purposes. The second kind of misuse, described in Time Series Considerations on the next page, occurs when care is not taken when analyzing changes in the OM export data over time.

Cross-sectional Considerations

Because exports are counted with the SED at the port of exit, the OM data are not appropriate to use in some circumstances. I refer to these restrictions as cross-sectional limitations because they have to do with how the data are attributed to the various U.S. states rather than the year the data are collected.

- ***Services not counted.*** The service sector is the largest component of the U.S. economy.[1] However, services are hard to count and do not have to go through a port. Therefore, these exports are not counted as part of the OM data despite their importance in the economy.
- ***Unknown relationships.*** Because the business relationships between exporters and importers are not reported in the OM data, it is not possible to know how much of the exports from U.S. firms are to foreign subsidiaries, multinationals, and unrelated parties.
- ***No firm characteristics.*** Because the export data are not disaggregated by the size of the exporting firm, how (or if) the pattern of exports differs for small- and medium-sized businesses compared to large businesses is unknown. Some data on the size of exporting firms are available in *A Profile of U.S. Exporting Companies* (U.S. Census Bureau, various years), but these data are not reported at the state level.
- ***High aggregation.*** The OM data are available only at the mid-level of industrial classification. The Census Bureau does not release the OM data at the six (of six) digit level because 1) there would be cases where the exports of individual firms could be used to publicly reveal private information similar to public disclosure of personal income and 2) there are problems with concordance between NAICS, the classification scheme in which the data are reported, and the Harmonized System, the classification scheme in which the data are recorded, at high levels of disaggregation. The disadvantage is that the data for a specific industry are unavailable.
- ***Sales value vs. value-added.*** The OM data are sales value (the price the export is sold for), not value-added (the enhancement added to a product or service by a firm before the product is offered to customers). Consider an intermediate good that was produced in Idaho. Now suppose that good is purchased by a final goods producer in Washington for $3500. The Washington firm builds on the intermediate good, providing a $2000 increase in value-added, and then exports the good for $5500. The OM data report an export of $5500 from Washington. Idaho does not receive any credit for the export. Consequently, the OM data *should not* be used as is to calculate a state's income or employment due to exporting. For Washington, the fact that final value is counted and not value-added likely plays a large role in the size of exports for "transportation equipment" (NAICS 336) that includes airplanes.
- ***Origin of movement vs. origin of production.*** Only the state where the export is shipped from receives credit for the export. Consider a final good that was produced in Idaho with a value of $3500. Suppose that firm sells the good to a Washington wholesaler or freight forwarder for $3500. The wholesaler does nothing to the good, but sells it abroad, charging $50 for its service. The OM data reports a Washington export for $3550. Idaho does not receive any credit for making the good. This example shows how the OM data do not necessarily represent the state of the origin of production of the export. In this sense, the OM data do not necessarily represent economic activity in the state that receives the credit for the export.

Furthermore, due to the definition of a shipment, the state where goods are consolidated for foreign transit receives credit for the entire value of the export. For example, in 2003, the OM data report that Louisiana exported 12 times more agricultural and animal products (NAICS 111 + 112) than it produced.[2] This is due to the consolidation of goods at the port of New Orleans

[1]Using the broadest definition of services that includes construction, wholesale and retail services, and (non-infrastructure) utilities, services account for 80% of the economic activity in the United States.

[2]Similarly, the exports from Texas to Mexico are too large to indicate production, but rather shipment consolidation and truck transit between the two countries.

produced in Midwest states bordering the Mississippi River. In general, border states with large ports benefit from consolidation of shipments at the expense of inland states or states without large port facilities. The previous example shows another limitation of the data because the $50 in services is not credited as an export in the wholesale sector but to the sector that produced the physical good.

- ***Includes inland transportation costs.*** Because the OM data are the sales value at the port of exit, the cost of transporting a good from the plant of production to the port is included. These inland shipping costs tend to exaggerate export statistics in two ways. First, the shipping cost will not be counted in the service sector but in the sector that produced the good. Second, the shipping cost will increase the value of exports from inland states far from ports. Cassey (forthcoming) shows that though the inland shipping cost increases the sales value for inland states in principle, in reality this increase is swamped by the decrease to the sales value that inland states receive because of consolidation in port states.

Time Series Considerations

There are advantages to using the time-related information in the OM data to make comparisons for a particular state. The main advantage from a data accuracy perspective is that if there are cross-sectional errors or misuses of the data like those described above, then any misinterpretation will become moot in a time series study focusing only on the changes in exports over time. This is because the effects of misusing the data in like manner every year will cancel in year-to-year comparisons of the data. For example, suppose you are doing a study on the economic impacts of exports of furniture and related products (NAICS 337). Suppose you know that most furniture is made in a different state, but exported by a wholesaler in your state. If this is true every year, then the bias created by the wholesaler is the same in every year. Thus, if you compare the export data from one year to another year, this bias cancels.

- ***Correcting for inflation.*** In order to compare export data across years, the data have to be converted from nominal values into real (inflation-adjusted) values to distinguish the cause for any increases. The first step is to find data on prices appropriate to the sector whose exports are being compared. Typically this information is obtainable from either the consumer price index (CPI) or producer price index (PPI), compiled by the Bureau of Labor Statistics (www.bls.gov). These price data are available by sector and geographic region. For example, the PPI can be used for goods manufactured in the Seattle-Tacoma-Bremerton cosmopolitan area. The second step is to divide the nominal values of the OM data by the values of the price index by year, then multiply the quotient by 100. This will convert the nominal values into real (inflation adjusted) values so that year-by-year comparisons may be made.[3]
- ***NAICS structural break.*** Any large change to the way the OM data are collected and categorized means years before the change cannot be compared to years after the change. The most significant of these changes occurred in 1997 when the Census began reporting data using NAICS rather than SIC. The two classifications systems are so different that pre-1997 data can only be compared to post-1997 data at the highest level of aggregation, such as all manufacturing from Washington. Updates to the classification scheme in 2002 and 2007 did not influence the OM data because they were at such a fine level of detail.
- ***Canada structural break.*** The other major change in collection occurred in 1990 when the United States began using Canadian import data for exports, which as mentioned in Time Series Considerations, means the OM data for Canada should not be compared pre- and post-1990.

Summary

The Washington State Department of Commerce (2009) claims Washington is the most export-dependent state. While this is true in a narrow sense, as Washington exports a higher percent of its shipments than any other state, to use the OM data to claim that a greater fraction of Washington jobs are due to international trade than any other state is unsubstantiated (Conway, 1997).

The same focused understanding of the OM data is a must for anyone wishing to make accurate claims using this information because of particular data collection methods and related rules. As a result, the OM data are potentially extremely relevant and informative about the pattern of exports across states or the outward focus of shipments within a state, but just as likely to be misleading.

[3]The price index data will also note the "base year," to which no inflation adjustments are needed and all others years are compared to. The index will be 100 in the base year. Typically the average prices from 1982 to 1984 are used as the base, though 2000 is also common.

References

Cassey, A.J. Forthcoming. State export data: origin of movement vs. origin of production. *Journal of Economic and Social Measurement.* A 2006 draft version is available as MPRA 3352 at http://mpra.ub.uni-muenchen.de/3352/1/MPRA_paper_3352.pdf.

Conway, Richard S. Jr. 1997. Foreign exports and the Washington State Economy. Report to the Washington State Department of Community, Trade, and Economic Development. http://www.commerce.wa.gov/uploads/exportstudy.pdf.

U.S. Census Bureau. 1998. Outbound process improvements: Quality of the U.S. export trade statistics. Prepared by Adam J. Wysocki for the Foreign Trade Division. Washington, DC. http://www.census.gov/foreign-trade/aip/outbound.pdf.

— 2002. Correct way to complete the Shipper's Export Declaration Form 7525-V. Prepared by the Foreign Trade Division. Washington, DC. http://www.census.gov/foreign-trade/regulations/forms/correct-way-to-complete-the-sed.pdf.

— Various years. A profile of U.S. exporting companies. Prepared by the Foreign Trade Division. Washington, DC. http://www.census.gov/foreign-trade/aip/index.html.

Washington State Department of Commerce. 2009. Why trade is important to Washington State. http://www.commerce.wa.gov/portal/alias__cted/lang__en/tabID__159/DesktopDefault.aspx.

World Institute for Strategic Economic Research. Various years. Origin of movement state export data. Holyoke, MA. http://www.wisertrade.org.

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