FOREIGN EXPORTS AND THE WASHINGTON STATE ECONOMY

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By

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PREFACE

This is the fourth study documenting the importance of international trade to the Washington State economy. The first study ("International Trade and the Washington State Economy, 1960-1972") was authored by Gary Vibber in 1974. I conducted follow-up studies in 1978 ("International Trade and the Washington State Economy: The Impact of Foreign Exports, 1963-1985") and 1987 ("Foreign Exports and the Washington Economy").

As in the previous investigations, the focus of this study is on the role of foreign export activity in the state economy, since foreign exports, which bring money into the economy and create jobs indirectly through a respending (multiplier) process, are the primary determinant of regional economic growth. However, excluding foreign imports from this analysis does not imply that they are unimportant to the economy. For example, without the ability of the aluminum industry to import bauxite from Australia, about 8,000 jobs in the state would be in jeopardy. Indeed, in an increasingly interdependent world, our overall competitiveness depends more than ever on the ability of our producers to obtain raw materials and intermediate products from abroad.

I would like to express appreciation to the Washington State Department of Community, Trade, and Economic Development, the Port of Seattle, the Port of Tacoma, and the Washington Public Ports Association for sponsoring this study. Special recognition goes to Steve Odom, Managing Director of the Trade and Market Development Division of the Washington State Department of Community, Trade, and Economic Development, who not only oversaw the project but also supplied valuable information on Washington international trade.

I would like to thank Jonathan Larson, who was research assistant on this project. Jonathan was responsible for conducting a survey of agricultural commissions in order to estimate the value of farm exports.

I would also like to thank Bill Beyers, Professor of Geography at the University of Washington, for sharing information from his study on producer services (i.e., business that sell services primarily to other businesses). His survey of 600 Washington firms provides the first good look at the importance of international markets to financial, business, and professional services.

Finally, I would like to acknowledge Professor Emeritus Philip Bourque of the Graduate School of Business Administration, University of Washington, for his indirect but crucial role in this study. Without his efforts in producing Washington's unique series of input-output tables, upon which the estimates of foreign exports in this analysis are largely made, this study on international trade would not have been possible.

Richard S. Conway, Jr.
February 24, 1997

EXECUTIVE SUMMARY

Trade has always played a vital role in the Washington State economy. Today, international trade is the fastest growing sector of the state economy. In 1995, foreign exports amounted to $28.2 billion, making Washington the most trade dependent state in the nation on a per capita basis.

The objective of this study is to analyze the impact of foreign exports on the Washington economy. Topics include the role of exports in regional economic growth, Washington's major foreign exports and markets, the state's dependency upon foreign exports, the contribution of foreign exports to growth, the impact on sub-state regions, the prospects for Washington foreign exports, and the implications for international trade policy.

The ability of a regional economy, like Washington, to sell goods and services in markets beyond its borders is a key determinant of its economic growth and welfare. In this study, a distinction is made between foreign exports and total exports. Foreign exports refer only to sales made outside the United States, whereas total exports also include sales to the rest of the United State and the federal government:

- Total exports from Washington (i.e., all out-of-state sales) reached $87.5 billion in 1995.

- Between 1960 and 1995, total exports, measured in 1995 dollars, nearly quadrupled, growing at an average annual rate of 3.8 percent.

- As evidence of the fact that exports are the principal driver of the state economy, Washington real personal income grew at nearly the same rate, 4.0 percent per year.

The United States is the largest buyer of Washington products, but the rest of the world is catching up. Over the past three decades, local businesses have turned more and more to other countries to market their goods and services:

- Foreign exports, which include the value of goods and services sold in other countries as well as the value of foreign travel expenditures in the state, totaled $28.2 billion in 1995.

- On a per capita basis, foreign exports in Washington amounted to $5,182, compared to only $3,063 in the United States.

- In spite of the fact that per capita foreign exports had fallen from a high of $6,746 in 1992, due to a downturn at The Boeing Company, Washington remained the nation's most trade dependent state.

- Between 1963 and 1995, Washington foreign exports in constant dollars grew at an average annual rate of 7.1 percent, almost twice the expansion rate of total exports.

- In 1995, foreign exports constituted one-third of Washington's total exports, up from one-ninth in 1963.

The mix of Washington's exports and markets has changed over time. For example, exports of services, including computer software, have expanded more rapidly than the exports of goods, while China has become a significant trading partner. As in the past, however, agricultural products, forest products, and aircraft accounted for the bulk of foreign sales in 1995, while Japan remained the state's most important market:

- The Boeing downturn notwithstanding, aircraft and parts were Washington's leading international export, amounting to $9.5 billion or one out of every three dollars of foreign sales in 1995.

- Agricultural products and forest products accounted for $5.4 billion or one-fifth of Washington's total international sales.

- Foreign exports of services totaled $6.9 billion, including, $1.3 billion for trade and transportation services associated with the foreign distribution of Washington produced goods, $1.8 billion for foreign travel, $2.5 billion for computer software, and $1.3 billion for miscellaneous financial, business, and professional services.

- Foreign exports of services grew at a much faster rate than merchandise exports, averaging 9.6 percent per year between 1963 and 1995, compared to 6.9 percent for goods.

- Services accounted for one-fourth of the total foreign exports in 1995, up from one-ninth in 1963.

- Japan was our largest trading partner, buying one-fourth of the Washington goods produced for export to other countries.

- Rounding out the top five trading partners were South Korea, Canada, Taiwan, and the United Kingdom.

- Seven of the top ten countries that buy Washington products are located in the Pacific Rim region, indicating the importance of that region (particularly Asia) to Washington international trade.

The demand for foreign exports affects production, jobs, and income throughout the Washington economy through the so-called multiplier process. In terms of broad economic measures, such as Gross State Product, total employment, and personal income, foreign exports directly and indirectly supported about one-fourth of the Washington economy in 1995:

- Foreign export production in 1995 directly involved 204,000 jobs (wage and salary employment and proprietors), which earned $8.7 billion in labor income.

- The equivalent of one out of every fifteen workers in Washington was engaged in the production of a good or service sold abroad.

- Jobs producing foreign exports paid $42,600 per year, almost 50 percent above the overall state average of $29,100.

- Foreign exports directly and indirectly accounted for $35.3 billion or 23.8 percent of Washington Gross State Product, according to simulations with the Washington

Projection and Simulation Model, a regional interindustry econometric model designed for forecasting and impact analysis.

- Including the indirect impact, 740,000 jobs were dependent upon international sales in 1995.
- Nearly one out of every four state jobs was tied to foreign exports, up from one out of nine in 1963.
- The implied foreign exports employment multiplier was 3.6, meaning that for every export job there were 2.6 supporting jobs in the economy.
- Directly and indirectly, foreign sales accounted for $30.8 billion in personal income or 23.9 percent of Washington personal income.
- Without foreign exports, Washington per capita income would have been $226 lower in 1995.
- In spite of the rise of services, one out of every two jobs related to foreign exports continued to depend upon agricultural products, forest products, and aircraft.
- Foreign travel supported 77,000 jobs (2.5 percent of total employment) and foreign exports of other services supported 168,000 jobs (5.4 percent of total employment) in the Washington economy.

Foreign exports have had a substantial impact on Washington's economic growth over the past thirty years, accounting for nearly one-third of the state's new jobs:

- Foreign exports have been the fastest growing sector of the state economy, rising from 6.1 percent of Gross State Product in 1963 to 19.0 percent in 1995.
- Sales abroad created more than 600,000 jobs in Washington between 1963 and 1995, representing 31 percent of the total increase in state jobs.
- Foreign export related jobs expanded twice as fast as other employment during that time.
- Without foreign export related jobs, the growth rate for real Gross State Product would have dropped from 3.4 percent to 2.9 percent, while the growth rate for employment would have fallen from 3.1 percent to 2.6 percent.
- The rapid expansion of international trade in Washington was the principal reason why the state grew faster than the nation between 1963 and 1995.

While international trade is focused in the Puget Sound region, it has also had a significant impact on the rest of the state:

- The four-county Puget Sound region, with 55.4 percent of the state population, accounted for 71.6 percent of Washington total foreign exports in 1995.

- Eastern Washington accounted for 15.6 percent of Washington foreign exports, while the rest of western Washington accounted for 12.8 percent.

- On a per capita basis, foreign exports from Puget Sound ($6,698), eastern Washington ($3,595), and western Washington ($3,008) either exceeded or were close to the national average ($3,063).

- In the Puget Sound region, foreign exports supported 28.6 percent of total employment.

- Foreign exports supported 18.4 percent of the jobs in eastern Washington and 13.3 percent of the jobs in western Washington.

Considering the turnaround at Boeing and the expectation of moderate but steady growth in the world economy, Washington foreign exports will expand rapidly over the next ten years. As a result, international trade will continue to be a major impetus for long-run growth:

- Washington foreign exports, measured in 1995 dollars, will grow at a 7 percent annual rate between 1995 and 2005, according to a forecast prepared for this study.

- Foreign sales of Washington produced goods and services will nearly double, rising from $28.2 billion in 1995 to $55.6 billion in 2005.

- In 2005, one out of every three Washington jobs will be directly and indirectly supported by international sales.

- Foreign deliveries of aircraft and parts, also rising at a 7 percent annual rate, will account for one-third of the total gain in international sales.

- Agricultural products and forest products will grow at much slower rates.

- Foreign travel spending is expected to rise at a 6 percent rate, while foreign exports of other services (including software) is projected to increase at a 11 percent rate.

- There will be little shift away from the state's reliance on Pacific Rim nations for international trade.

If there is a single conclusion to be drawn from this study, it is the following: no state derives more economic benefit from the production of goods and services for foreign markets than Washington. Thus, it is imperative that the state continues to maintain an environment that fosters international trade:

- Washington should continue to pursue measures to keep the state competitive in the world market, focusing on investment in human resources and infrastructure.

- Washington should adopt a strong position in favor of open markets, recognizing that the state economy, because of its strong international market orientation, would be one of the biggest losers if trade were restricted.

- Washington should also facilitate the flow of information about its export possibilities, especially with regard to new products.

FOREIGN EXPORTS AND THE WASHINGTON STATE ECONOMY

1. INTRODUCTION

Trade has always played a vital role in the Washington State economy. When Captain James Cook, the Scottish navigator, explored the Pacific Northwest coast in 1778, he found Native Americans exchanging fish, firs, seashells, and wood-carved canoes. In the 1850s, shortly after the arrival of the first white settlers, San Francisco investors built sawmills on the Kitsap Peninsula to supply lumber to California's gold rush economy. The boom and bust nature of the California economy, however, motivated local traders to diversify their markets. Thus, by the end of the decade, the Puget Sound region was part of the vast Pacific Rim economy, exporting products as far away as Honolulu, Callao, and Melbourne. Today, international trade is the fastest growing sector of the Washington economy. In 1995, foreign exports amounted to $28.2 billion, making Washington the most trade dependent state in the nation on a per capita basis.

The objective of this study is to analyze the role of international trade in the Washington economy. Focusing on the impact of foreign exports, the investigation addresses the following questions:

1. How does export activity affect the growth of regional economies like Washington?

2. What are the state's major foreign exports and markets?

3. To what extent is the Washington economy dependent upon foreign exports?

4. How has the expansion in international trade contributed to growth?

5. What is the impact of foreign exports on sub-state regions?

6. What are the prospects for Washington foreign exports?

7. What are the implications for international trade policy?

The study draws upon the analytical capabilities of the Washington Projection and Simulation Model (Bourque, Conway, and Howard, 1977; and Conway, 1990). Developed at the University of Washington, WPSM is an interindustry econometric model designed for forecasting and impact analysis. Through its depiction of the interrelationships (i.e., purchases and sales) among the sectors of the state economy (businesses, households, and government), the model has the ability to measure the impact of changes in one industry or sector (such as foreign exports) on the rest of the economy.

The study begins in Section 2 with a discussion of the relationship between export activity and regional economic growth. The third section describes foreign export trade in Washington, measuring its growth over the past three decades, evaluating the composition of exported goods and services, and identifying the state's major trading partners. Section 4, which is the

centerpiece of the study, presents estimates of the impact of foreign exports on Washington Gross State Product, employment, personal income, and population in 1995. Impact estimates are also reported for three categories of foreign exports (goods, travel, and other services), four categories of goods (agriculture and food products, forest products, aerospace, and other goods), and three sub-state regions (Puget Sound, the rest of western Washington, and eastern Washington). In Section 5, the future of foreign trade and its impact on the Washington economy are discussed. The report closes with some implications for international trade policy.

2. EXPORTS AND ECONOMIC GROWTH

Role of Exports

In the context of a regional economy, like Washington State, *exports* are broadly defined to include the sales of locally produced goods and services to foreign markets, customers in the rest of the United States, and the federal government.[1] Accordingly, Washington exports from the aerospace industry, for example, encompass sales to foreign airlines, U.S. air carriers headquartered outside the state, and the military.

The ability of a region to sell goods and services in markets beyond its borders is a key determinant of its economic growth and welfare. Norman Glickman, a noted regional economist, expressed it this way: "goods sold beyond the local boundaries are said to earn 'foreign exchange,' allowing the importation of food, raw materials, and other manufactured products into the region.[2]"

Conceptually, a regional economy can be divided into two parts: basic activity and non-basic activity. Basic activity brings new money into the economy and supports non-basic activity (principally, activity in trade, services, and local government) through a respending (multiplier) process. Basic activity takes many forms, including merchandise exports, tourism, defense expenditures, and retirement income. Such sources of new money are critical to the health of the economy. Indeed, without basic activity the regional economy would wither and die.

Export production is Washington's most critical basic activity, accounting for roughly 80 percent of the state's employment when you take into account its indirect impact. The United States is the largest buyer of Washington products, but the rest of the world is catching up.

Exports and Growth

Measured in 1995 dollars, total exports from Washington State (i.e., sales to foreign countries, the rest of the United States, and the federal government) reached a new high of $87.5 billion in 1995.[3] Between 1960 and 1995, total exports nearly quadrupled, growing at an average annual rate of 3.8 percent.

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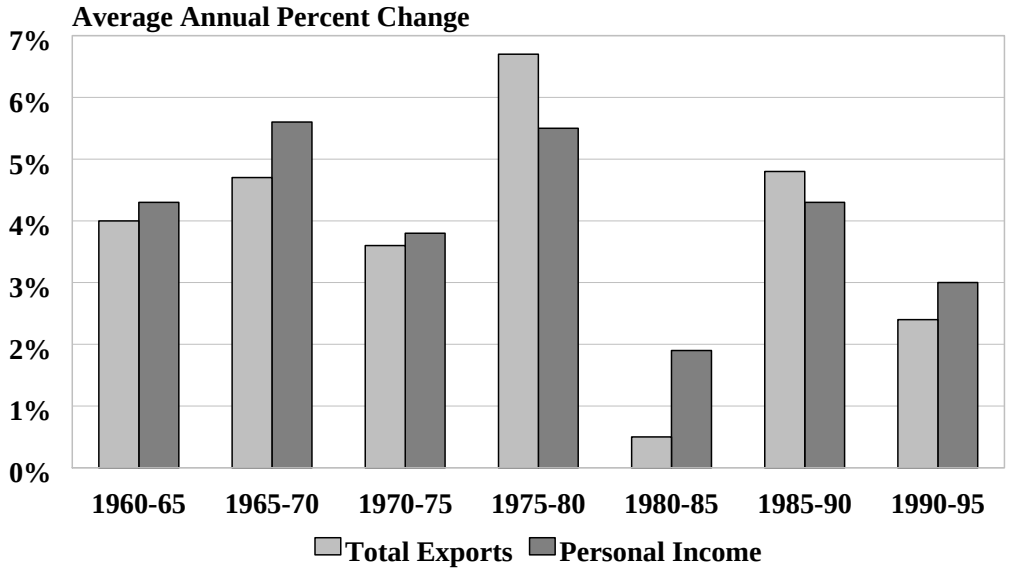
[1]The technical appendix provides additional information on the definitions, conventions, data, and methodology used in this study.

[2]Glickman, N. J. *Econometric Analysis of Regional Systems: Explorations in Model Building and Policy Analysis.* New York: Academic Press, 1977, p. 16.

[3]Except where noted, this study is the source of the export estimates and other data presented in this report. As discussed in the appendix, however, these estimates are in turn based on information from several primary data sources.

Figure 1
WASHINGTON STATE TOTAL EXPORTS AND PERSONAL INCOME, 1960-1995*



***Measured in 1995 dollars.**

In spite of healthy long-run growth, Washington's export expansion during the 35-year period proceeded at an uneven pace, as shown in Figure 1. For example, exports grew at a strong 4.8 percent average annual rate during the last five years of the 1980s, led by a $13.1 billion surge in aircraft deliveries. However, due to a reversal of fortunes at The Boeing Company, the export growth rate between 1990 and 1995 was cut by one-half.

The close relationship between out-of-state sales and personal income is also shown in Figure 1. As evidence of the fact that exports are the principal driver of the state economy, Washington personal income, when adjusted for inflation, grew at nearly the same average rate as total exports, 4.0 percent per year, between 1960 and 1995. During the strong export expansion of the late 1970s, income grew at a 5.5 percent rate. However, between 1980 and 1985, due to the sharp slowdown in exports because of the 1982 recession, the annual growth rate of Washington income dropped to 1.9 percent. This up and down pattern repeated itself again in the late 1980s and early 1990s.

3. WASHINGTON STATE FOREIGN EXPORTS

Past Trends and Current Situation

Washington State *foreign exports* refer only to sales made outside the United States. For purposes of this study, foreign exports more specifically include the following:

1. The value of goods produced in Washington and sold in foreign markets.

2. The value of services produced in Washington and sold in foreign markets, including the value of transportation and trade services required for the distribution of goods.

3. The value of foreign travel expenditures in Washington.

The concept of foreign exports in this study is comparable to that used in the national income and products accounts.

Foreign sales from Washington, measured in 1995 dollars, totaled $28.2 billion in 1995 (Table 1). This number was down from a high of $34.7 billion in 1992 because of a $9.4 billion drop in sales of aircraft and parts. In spite of this, foreign exports continued to be considerably more important to Washington than the rest of the United States (Figure 1). With 2.1 percent of the national population, Washington accounted for 3.5 percent of U.S. exports in 1995. Per capita foreign exports in Washington amounted to $5,182, compared to only $3,063 in the United States.

Table 1

WASHINGTON STATE FOREIGN EXPORTS, 1963-1995

Millions of 1995 Dollars

	1963	1967	1972	1977	1982	1987	1992	1995
Goods	2,623	4,145	6,282	7,428	10,877	17,044	29,036	21,036
Services	480	621	743	1,377	1,889	2,812	5,680	7,125
Travel	152	197	255	431	579	868	1,752	1,844
Other services	328	424	488	946	1,310	1,944	3,928	5,281
Foreign exports	3,103	4,766	7,025	8,806	12,766	19,856	34,715	28,161

While there is some doubt as to whether or not Washington retained its position as the nation's most trade dependent state in 1995, there is no question that it will soon become the clear leader again. In 1992, when international trade in Washington reached a peak, foreign exports amounted to $6,746 per person, nearly three times the national average. In terms of per capita foreign exports, Washington exceeded the next highest state (Connecticut) by more than $2,000, according to U.S. Department of Commerce figures. Considering the fact that Boeing is now midway in the process of doubling aircraft production over a two-year period, Washington foreign exports per capita will soon surpass the previous high and the state will once again head the list by a wide margin.

Overseas markets have always played a role in the Washington economy, even in the early days of statehood when lumber was loaded onto sailing ships bound for Asia. However, foreign trade has grown at a very high rate by historical standards over the past three decades. Between 1963 and 1995, the earliest and latest years for which there are reasonably accurate estimates,

Figure 2

U.S. AND WASHINGTON STATE PER CAPITA FOREIGN EXPORTS, 1985-1995

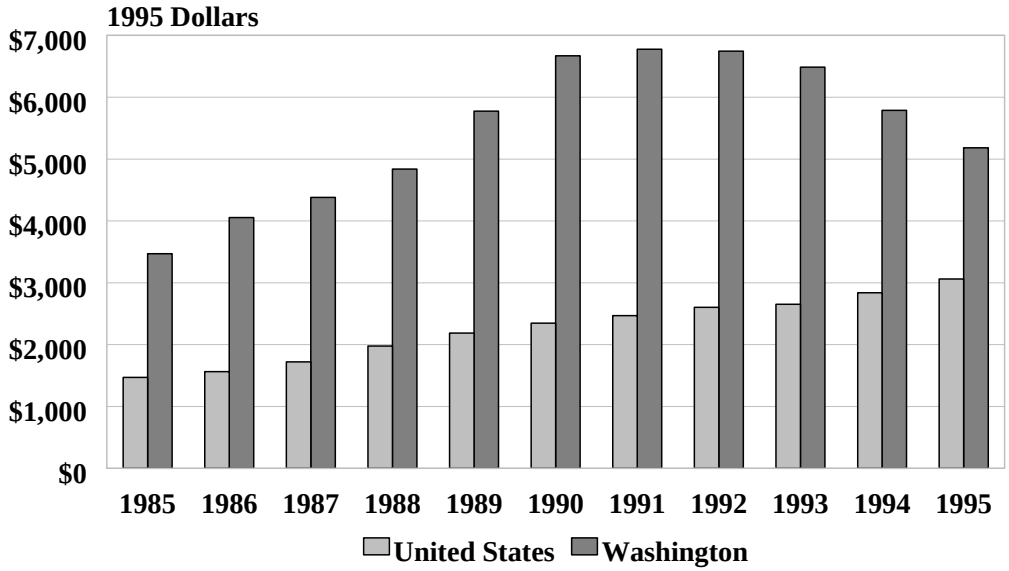
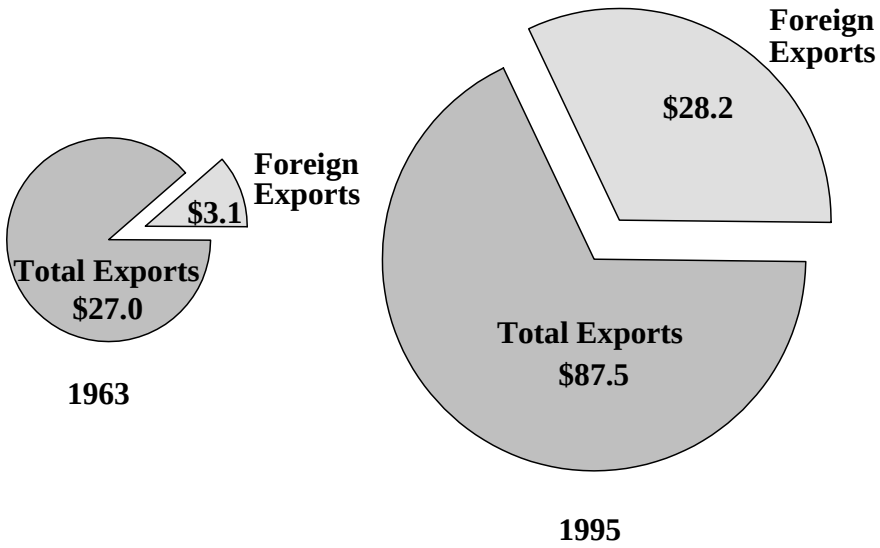


Figure 3

WASHINGTON STATE EXPORTS, 1963-1995
Billions of 1995 Dollars



Washington foreign exports in constant dollars grew at an average annual rate of 7.1 percent.[4] This was also almost twice the pace of the expansion of total Washington out-of-state sales. As a consequence, foreign exports as a fraction of the state's total exports rose substantially during that time. By 1995, foreign exports constituted one-third of Washington's total external sales, up from one-ninth in 1963 (Figure 3).

Table 2

WASHINGTON STATE FOREIGN EXPORTS, 1963-1995*

Average Annual Percent Change

	1963-72	1972-82	1982-92	1992-95	1963-95
Goods	10.2	5.6	10.3	-10.2	6.7
Services	5.0	9.8	11.6	7.9	8.8
Travel	5.9	8.6	11.7	1.7	8.1
Other services	4.5	10.4	11.6	10.4	9.1
Foreign exports	9.5	6.2	10.5	-6.7	7.1

*Measured in 1995 dollars.

While the annual volume of Washington foreign exports increased nine-fold during the 32-year period, the growth rate was volatile (Table 2). After expanding at a 9.5 percent annual rate between 1963 and 1972, the growth rate declined to 6.2 percent between 1972 and 1982. Foreign exports surged during the next ten years, climbing at a 10.5 percent annual rate. Between 1992 and 1995, however, foreign exports fell 6.7 percent per year.

Major Exports

Table 3 identifies the industry of origin of Washington's foreign exports in 1963, 1967, 1972, 1977, 1982, 1987, 1992, and 1995. Values are expressed in millions of 1995 dollars at producers' prices. In 1995, as in 1963, agricultural commodities and processed food, forest products, and aircraft and parts accounted for the bulk of the total value of foreign sales, although their combined share was down from two-thirds to about one-half. Services, including transportation and trade services required to ship commodities abroad, foreign travel, and financial, business, and professional services, accounted for another one-fourth of the total, up from one-ninth in 1963. Other foreign exports of note included chemical products, refined petroleum, aluminum, machinery, and scientific instruments (part of other manufacturing).

The recent downturn notwithstanding, aircraft and parts were Washington's leading international export. In 1995, the aerospace industry accounted for more than one out of every three dollars of

[4]For this study, Washington foreign exports are presented for 1963, 1967, 1972, 1977, 1982, 1987, 1992, and 1995. Five of these eight years (1963, 1967, 1972, 1982, and 1987) correspond to the years of the Washington input-output studies, which are a principal source of export data. Appendix B contains more detailed estimates of the foreign export series, which run annually from 1960 to 1995.

foreign sales, making it, on this basis, one and one-half times more important than it was in 1963. Led by Boeing, perennially the nation's top exporting business, aerospace foreign exports increased nearly thirteen-fold during the 32-year period. The $8.8 billion expansion in aircraft sales accounted for one-third of the total increase in Washington foreign exports over that period.

Table 3

WASHINGTON STATE FOREIGN EXPORTS BY INDUSTRY OF ORIGIN, 1963-1995

Millions of 1995 Dollars

	1963	1967	1972	1977	1982	1987	1992	1995
Resources	470	493	572	591	640	732	949	1,060
Agriculture	466	489	567	583	630	709	928	1,040
Other resources	4	4	5	8	10	23	21	20
Manufacturing	1,845	3,206	5,106	6,119	9,261	14,935	26,668	18,540
Food products	109	118	192	344	498	657	917	1,266
Lumber and wood products	402	793	1,471	1,375	1,423	2,031	1,988	1,897
Paper products	253	364	442	531	759	938	1,028	1,230
Chemical products	11	15	22	46	90	193	154	219
Petroleum products	10	13	101	83	119	187	365	373
Primary metals	263	238	286	185	388	620	685	704
Nonelectrical machinery	18	49	67	130	232	337	658	990
Electrical machinery	2	10	25	41	93	201	330	597
Aerospace	734	1,549	2,420	3,098	5,044	8,812	18,910	9,490
Other manufacturing	43	57	80	287	616	961	1,634	1,775
Nonmanufacturing	365	518	740	1,088	1,726	2,826	5,639	6,917
Transportation services	144	204	291	392	562	878	1,356	1,387
Wholesale and retail trade	140	209	305	396	566	875	1,364	1,408
Services	81	105	144	300	598	1,073	2,919	4,122
Other (scrap, royalties, etc.)	424	549	607	1,008	1,140	1,362	1,460	1,644
Foreign exports	3,103	4,766	7,025	8,806	12,766	19,856	34,715	28,161

Foreign exports of raw and processed agricultural products, when measured in constant dollars, quadrupled between 1963 and 1995. Nevertheless, their relative share of total foreign sales dropped from 19 percent to 8 percent. White wheat destined for Asia is the state's major exported agricultural commodity. In 1995, wheat exports were valued at $660 million. Washington growers also shipped abroad 23 million boxes of apples worth $204 million. Major processed food exports included canned fruits and vegetables, frozen juice, and fish.

Foreign shipments of forest products also registered substantial gains, ending up five times greater in volume in 1995 than 1963. In the earlier years, log exports serving the Japanese housing market accounted for most of the growth. However, after reaching a peak of 2.8 billion

board feet in 1988, log exports plummeted because of timber harvest restrictions on public lands. As a consequence, in spite of gains in overseas shipments of lumber and milled products, lumber and wood product exports in constant dollars declined between 1988 and 1995. In contrast, foreign sales of pulp and paper rose more or less steadily over the entire 32-year period.

Table 4

DESTINATION OF WASHINGTON STATE FOREIGN EXPORTS OF GOODS, 1995

Millions of Dollars and Percent of Total

	Foreign Goods Exports	Percent
Japan	6,281	25.3
South Korea	2,803	11.3
Canada	2,611	10.5
Taiwan	1,794	7.2
United Kingdom	1,288	5.2
China	1,133	4.6
Singapore	1,097	4.4
Germany	804	3.2
Netherlands	801	3.2
Hong Kong	711	2.9
Other	5,524	22.2
Foreign goods exports	24,847	100.0

Source : Massachusetts Institute of Social and Economic Research

The fourth major category of Washington foreign exports is services (labeled nonmanufacturing in Table 3).[5] Of the estimated $6.9 billion in exported services in 1995, $1.3 billion were for trade and transportation services associated with the foreign distribution of goods produced in the state, $1.8 billion were for foreign travel in Washington, and $3.8 billion were for miscellaneous financial, business, and professional services, including computer software.[6] Exports of services grew much faster than merchandise exports, averaging 9.6 percent per year between 1963 and 1995, compared to 6.9 percent for goods. Spending in Washington by foreign travelers increased at a 8.1 percent rate, rising from $0.2 billion in 1963 to $1.8 billion in 1995. Much of the recent growth in services is attributable to the emergence of Microsoft Corporation as the world's

[5]There is a fifth category of exports (labeled "other") that is not part of the impact analysis. It includes scrap, royalties, license fees, and goods and services purchased by the federal government and transferred or sold to foreign countries. The reason for making these estimates is to provide a Washington total foreign export number that is comparable in definition to the one reported for the United States in the national income and product accounts.

[6]Of the estimates of foreign exports, those made for services are subject to the largest measurement error. Refer to the appendix for a discussion of the methods for estimating the various components of exported services.

leading producer of software for personal computers. Ten years ago foreign shipments of software from Washington barely tipped the scale. In 1995, software exports weighed in at $2.5 billion, accounting for more than one-third of the value of exported services.

Trading Partners

Identification of the exact overseas destinations of Washington State produced goods and services is difficult to make, but data compiled for the Washington State Department of Community, Trade, and Economic Development by the Massachusetts Institute of Social and Economic Research (MISER) give a good indication. Table 4 shows foreign exports of goods by country of destination in 1995. Note that these export estimates exclude services, including computer software. Furthermore, as noted in the technical appendix, the MISER "exporter location" series overestimates Washington agricultural exports. Thus, these export figures are not strictly comparable to estimates used elsewhere in this report.[7]

Japan was Washington's top major trading partner, accounting for nearly one-quarter of the $24.8 billion of goods shipped abroad from Washington producers in 1995, according to MISER. Indicative of the importance of Pacific Rim markets to Washington international trade, seven of the top ten countries are located in that region. Export trade to these seven countries totaled $16.4 billion or two-thirds of the total. The United Kingdom, West Germany, and the Netherlands, purchasing a total of $2.9 billion worth of Washington goods, were the state's three principal European markets in 1995.

4. ECONOMIC IMPACT OF FOREIGN EXPORTS

Impact Methodology

The demand for Washington State produced goods and services by foreign buyers triggers a chain of economic events that affects production, employment, and income throughout the structure of the state economy. For example, the immediate impact of the growth of foreign aircraft sales is an increase in aerospace production, employment, and income. However, aerospace production also places demands on other regional businesses, such as machine tool shops, electronics firms, and financial institutions, to help supply the parts and services required to build airplanes. These businesses, through the operation of their so-called backward linkages, in turn stimulate activity in other parts of the economy. Simultaneously, the income earned by workers in aerospace and its supporting industries generates demands for consumer goods and services and the services of government, imparting yet another round of spending in the state economy. Finally, changes in production, income, and population result in the need for additional capital in the form of new commercial buildings, industrial equipment, houses, and schools, which induces production primarily in the construction and related industries.

The Washington Projection and Simulation Model (WPSM), an interindustry econometric model, is a means of measuring the total (direct and indirect) impact of foreign exports on the state economy. The impact estimating procedure is relatively straightforward. Using WPSM, the

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[7]A potential alternative for Table 4 is the so-called "origin of movement" series, which reports exports of goods by country of destination shipped through all Washington ports. This series, however, includes goods produced elsewhere but transshipped through the state as well as excludes some Washington produced goods shipped through ports outside the state. In spite of major differences between the exporter location and origin of movement series, they tell virtually the same story with regard to the state's major trading partners.

behavior of the economy is first simulated *with foreign export demand* to produce a baseline projection over a period of time. The simulation is then repeated but *without foreign export demand* to yield a conditional projection. The difference between the two projections is a measure of the total impact of foreign sales. Since WPSM is a comprehensive model, the economic impact can be expressed in terms of employment and income by industry, population, personal income, consumption expenditures, state and local government spending, and fixed investment, among other economic and demographic variables.

One word of *caution* about the interpretation of the impact is in order. It is tempting to think of the export impact on, say, employment as the number of jobs that would be lost if foreign demand dropped to zero. Although there would be substantial job losses, especially in the long run, the economy would make adjustments to mitigate the impact. For example, if there were a reduction in foreign exports, regional prices and wages would tend to decline, or at least not rise as rapidly, which would, among other things, stimulate the local use of the commodities and labor formerly involved in foreign trade. The impact should therefore be interpreted only as the employment and income *related* to foreign exports *given* the structural conditions of the economy--its prices, interindustry relationships, productivity, and wage rates--at a particular point in time.

Washington State Economic Impact

Export production in 1995 directly involved 204,000 jobs (wage and salary employment and proprietors), which earned $8.7 billion in labor income (Table 5). This meant that the equivalent of one out of every fifteen workers in Washington was engaged in the production of a good or service sold abroad. Jobs producing foreign exports paid $42,600 per year, almost 50 percent above the overall state average of $29,100. In spite of the recent downturn at Boeing, aerospace contributed one-fourth of the direct foreign export jobs. The other three-fourths were concentrated in agriculture, forest products, transportation, wholesale trade, and services. Services included about 6,000 jobs producing software for personal computers.

Table 6 shows the <u>total impact</u> of foreign exports on the Washington economy, taking into account the multiplier effect. The first column shows the actual level of the Washington economy in 1995 (i.e., <u>with</u> foreign exports). The second column is a projection of what the economy would have looked like <u>without</u> foreign exports. The difference between these two columns is an estimate of the total economic impact of foreign exports. Also shown in Table 6 is the impact of foreign exports as a percent of the state's total economic activity.

In terms of broad economic measures, such as Gross State Product, total employment, and personal income, foreign exports <u>directly and indirectly</u> supported 24 percent of the Washington economy in 1995:

1. <u>Gross State Product</u>. Gross State Product, like its national counterpart (Gross Domestic Product), is the broadest measure of economic activity in the state. In 1995, Washington Gross State Product was $148.3 billion. Foreign exports directly and indirectly accounted for $35.3 billion or 23.8 percent of total Gross State Product.

2. <u>Output</u>. The impact of foreign exports on industrial output amounted to $55.2 billion. This figure includes the value of foreign exports. Thus, the impact on other industrial output was $27.0 billion. Most of the indirect impact fell on nonmanufacturing industries, principally trade and services.

Table 5

WASHINGTON STATE FOREIGN EXPORTS, EMPLOYMENT, AND LABOR INCOME BY INDUSTRY OF ORIGIN, 1995

Millions of 1995 Dollars and Thousands of Jobs

	Foreign Exports	Employment	Labor Income
Resources	1,060	16	409
Agriculture	1,040	16	401
Other resources	20	*	8
Manufacturing	18,540	97	5,148
Food products	1,266	5	168
Lumber and wood products	1,897	10	399
Paper products	1,230	4	201
Chemical products	219	1	58
Petroleum products	373	*	16
Primary metals	704	2	113
Nonelectrical machinery	990	7	331
Electrical machinery	597	4	161
Aerospace	9,490	49	3,165
Other manufacturing	1,775	15	537
Nonmanufacturing	6,917	91	3,146
Transportation services	1,387	13	483
Wholesale and retail trade	1,408	23	540
Services	4,122	55	2,123
Other	1,644	---	---
Foreign exports	28,161	204	8,703

*Less than 500.

3. Employment. Including the indirect impact, 740,000 jobs (wage and salary workers and proprietors) were dependent upon international sales. This represented 23.7 percent of Washington's 3.1 million jobs. Thus, nearly one out of every four state jobs was directly or indirectly tied to foreign exports. This compares with one out of nine jobs in 1963, illustrating the increasing importance of foreign markets in recent decades. The implied employment multiplier for foreign exports was 3.6 (=740,000/204,000), meaning that for every export job there were 2.6 supporting jobs in the economy. Ninety percent of the indirect jobs were found in trade, services, and government. The wage and salary employment multiplier, which excludes proprietors, was 3.3 (=605,000/185,000).

Table 6

WASHINGTON STATE FOREIGN EXPORTS IMPACT, 1995

	1995 Washington	Without Foreign Exports	Difference	Percent Difference
DIRECT IMPACT				
Foreign exports (bils. $)	28.2	0	28.2	100.0
Employment (thous.)	204	0	204	100.0
Labor income (bils. $)	8.7	0	8.7	100.0
TOTAL IMPACT				
Gross State Product (bils. $)	148.3	113.0	35.3	23.8
Output (bils. $)	219.8	164.6	55.2	25.1
Resources	7.0	4.5	2.5	35.8
Manufacturing	67.0	42.3	24.7	36.9
Nonmanufacturing	145.8	117.8	28.0	19.2
Employment (thous.)	3,126	2,387	740	23.7
Proprietors	554	420	134	24.2
Wage and salary employees	2,572	1,967	605	23.5
Resources	53	34	18	34.6
Agriculture	43	27	16	37.5
Other resources	9	7	2	21.3
Manufacturing	334	211	123	36.9
Food products	42	34	8	19.2
Lumber and wood products	37	21	15	41.4
Paper products	17	13	4	24.9
Aerospace	80	31	49	60.8
Other manufacturing	158	111	47	29.7
Nonmanufacturing	1,673	1,292	380	22.7
Construction	128	113	16	12.2
Transportation and public utilities	122	93	29	24.0
Wholesale and retail trade	598	473	125	20.9
Finance, insurance, and real estate	129	103	27	20.6
Services	694	511	183	26.4
Government	513	429	84	16.3
Personal income (bils. $)	129.1	98.3	30.8	23.9
Labor income	91.0	68.4	22.6	24.9
Other income	38.1	29.9	8.2	21.5
Per capita income ($)	23,774	23,548	226	1.0
Population, July 1 (thous.)	5,431	4,174	1,257	23.1

4. Personal income. Directly and indirectly, foreign sales accounted for $30.8 billion in personal income or 23.9 percent of the state total ($129.1 billion). Without foreign exports, Washington per capita income would have been $226 lower.

5. Population. The equivalent of 1,257,000 people living in the state depended upon foreign exports in 1995. The implied population multiplier was 6.2 (=1,257,000/204,000), meaning that each worker producing a good or service for markets abroad directly and indirectly supported a total of six Washington residents.

Impact of Selected Foreign Exports

The impacts of selected foreign exports are shown in Tables 7 and 8. The first table divides the total foreign export impact on Washington State into three major categories: goods; travel; and other services. The second table further separates the goods impact into four groups: agriculture and food products; forest products; aerospace, and other goods. Note that the direct employment impacts of goods include the services of Washington transportation and wholesale trade industries required to bring those products to market.

Table 7

WASHINGTON STATE FOREIGN EXPORTS IMPACT BY MAJOR CATEGORY, 1995

	Goods	Travel	Other Services	Total
DIRECT IMPACT				
Foreign exports (bils. $)	21.0	1.8	5.3	28.2
Employment (thous.)	124	32	48	204
Labor income (bils. $)	6.0	0.6	2.1	8.7
TOTAL				
Gross State Product (bils. $)	24.8	2.6	7.9	35.3
Output (bils. $)	41.5	3.6	10.1	55.2
Employment (thous.)	495	77	168	740
Personal income (bils. $)	21.3	2.6	6.9	30.8
Population, July 1 (thous.)	853	129	275	1,257
PERCENT OF STATE TOTAL				
Gross State Product	16.7	1.8	5.3	23.8
Output	18.9	1.6	4.6	25.1
Employment	15.8	2.5	5.4	23.7
Personal income	16.6	2.0	5.3	23.9
Population	15.6	2.4	5.1	23.1

In spite of the rise of service exports, Washington international trade has retained much of its traditional character. In 1995, for example, one out of every two jobs related to foreign exports continued to depend upon raw and processed agricultural commodities, wood and paper products, and commercial aircraft:

1. Agriculture and food products. In 1995, exports of farm products valued at $2.7 billion (inclusive of transportation and wholesale trade mark-ups) directly accounted for 21,000 jobs and $0.6 billion in labor earnings in agriculture and food products. Another 3,000 Washington workers with earnings of $0.1 billion in transportation services and trade were required to help deliver the products to other countries. Counting the indirect effects, the impact of foreign exports of farm products amounted to 90,000 jobs and $3.3 million of personal income. These figures represented nearly three percent of the state's totals. The implied employment multiplier for agriculture and food products exports was 3.8 (=90,000/24,000).

Table 8

WASHINGTON STATE FOREIGN EXPORTS IMPACT BY MAJOR GOOD, 1995

	Agriculture and Food Products	Forest Products	Aerospace	Other Goods	Total
DIRECT IMPACT					
Foreign exports* (bils. $)	2.7	3.5	9.7	5.2	21.0
Employment (thous.)	24	17	50	33	124
Labor income (bils. $)	0.7	0.7	3.2	1.4	6.0
TOTAL					
Gross State Product (bils. $)	3.8	4.4	10.9	5.7	24.8
Output (bils. $)	6.4	8.8	16.6	9.7	41.5
Employment (thous.)	90	92	194	119	495
Personal income (bils. $)	3.3	3.9	9.2	4.9	21.3
Population, July 1 (thous.)	140	159	343	211	853
PERCENT OF STATE TOTAL					
Gross State Product	2.5	3.0	7.3	3.9	16.7
Output	2.9	4.0	7.6	4.4	18.9
Employment	2.9	3.0	6.2	3.7	15.8
Personal income	2.6	3.0	7.1	3.9	16.6
Population	2.6	2.9	6.3	3.8	15.6

*Foreign exports include trade and transportation margins.

2. Forest products. With foreign sales of $3.5 billion, export employment directly involved in the production and shipment of forest products amounted to 17,000 jobs and $0.7 billion in labor income. The total employment and personal income impacts summed to 92,000 jobs and $3.9 billion, respectively, representing three percent of Washington's employment and income in 1995. The forest products employment multiplier in this case was 5.4.

3. Aerospace. The greatest impact in the foreign trade sector emanated from aircraft production, which directly employed 50,000 workers with a combined labor income of $3.2 billion. Taking into account the indirect effects, the total impact was 194,000 jobs or six percent of total state employment. The income impact amounted to $9.2 billion or seven percent of Washington's total personal income. The implied employment multiplier was 3.9.

4. Travel. Visitors from other countries spent $1.8 billion in Washington and directly employed 32,000 people, mostly in hotels and lodging, eating and drinking places, and transportation services. The total impact amounted to 77,000 jobs and $2.6 billion of income or a little more than two percent of the state's totals. The travel industry's employment multiplier was 2.4.

5. Other services. This category encompasses transportation and wholesaling activities not associated with the export of Washington produced goods (e.g., midwest products shipped through Puget Sound ports), computer software, and financial, business, and professional services. With the stunning growth of the software industry, these exports have expanded rapidly over the past ten years, nearly three times faster than goods. In 1995, foreign exports of other services reached $5.3 billion, directly engaging 48,000 workers. Altogether they supported 168,000 jobs and $6.9 billion of personal income, representing five percent of the economy. The other services employment multiplier was 3.5. The software multiplier was 4.4.

Impact on Growth

Washington State has significantly outpaced the United States over the past three decades. Whereas national employment has doubled since 1963, state employment has tripled. This strong showing has been due largely to the ability of Washington businesses to exploit expanding world markets. In fact, foreign exports have been the fastest growing sector of the state economy.

Between 1963 and 1995, Washington foreign exports, measured in 1995 dollars, grew nine-fold, rising from $3.1 billion to $28.2 billion. The average growth rate of 7.1 percent more than doubled the 3.4 percent rate of real Gross State Product. As a consequence, foreign exports climbed from 6.1 percent of Gross State Product in 1963 to 19.0 percent in 1995 (Figure 4).

The impact of this growth on Washington employment has been remarkable. In 1963, foreign export production directly engaged 41,000 jobs. Since the employment multiplier at that time was about 3.2, the total number of jobs supported by foreign exports was 132,000 or about 11 percent of state employment (Table 9). Given that foreign exports generated a total of 740,000 jobs in 1995, this meant that sales abroad created more than 600,000 jobs in Washington over the 32-year period, representing 31 percent of the total increase in state jobs.

Figure 4

WASHINGTON STATE FOREIGN EXPORTS, 1963-1995

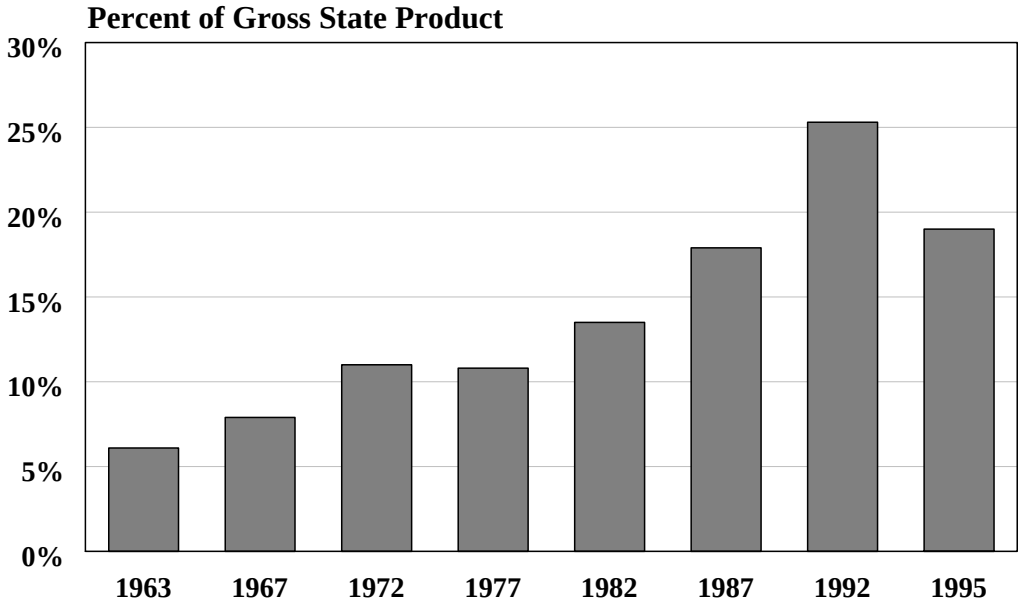

Table 9

WASHINGTON STATE EMPLOYMENT GROWTH, 1963-1995

	1963	1995	Average Annual Growth Rate
Washington employment (thous.)	1,181	3,126	3.1%
Foreign export related	132	740	5.5%
Other	1,049	2,386	2.6%
U.S. employment (mils.)	74	149	2.2%

Foreign export related jobs expanded twice as fast as other employment during that time. Without those jobs, the growth rate for real Gross State Product would have dropped from 3.4 percent to 2.9 percent. The employment growth rate would have fallen from 3.1 percent to 2.6 percent. Without the expansion of foreign trade, Washington would have still outperformed the nation, but the difference in growth rates, amounting to 0.4 percentage points for employment, would have been much smaller.[8]

Impact on Regions

At the risk of oversimplification, Washington can be divided into three economic regions: the central Puget Sound metropolitan region; the timber counties concentrated in the rest of western Washington; and the agricultural area east of the Cascade Mountains. In each region, goods and services for foreign markets are produced in substantial quantities and have a significant impact on the local economy:

1. Puget Sound Region. The central Puget Sound region, which includes King, Pierce, Snohomish, and Kitsap counties, is more dependent upon international trade than the rest of the state (Figures 5 and 6). With 55.4 percent of the Washington population, the Puget Sound region accounted for 71.6 percent of the foreign exports in 1995. Indeed, with foreign exports totaling $20.2 billion, no region in the United States is more oriented to international trade than the Puget Sound region. Aircraft and parts, which had a total value of $9.3 billion, was the principal exported product. Other major exports included processed food, forest products, machinery, and instruments. The four-county region was also an international center for transportation, financial, business, and professional services as well as a primary destination for foreign visitors. It is also the home of Microsoft, which ships more than 50 percent of its computer software out of country.

   In 1995, foreign exports directly and indirectly supported 540,000 jobs in the Puget Sound region. Thus, more than one out every four people working in the region owed their livelihood to international trade. About 30 percent of this employment was directly involved in the production of foreign exports. The remaining jobs, found primarily in retail trade, services, and government, were supported through the multiplier process.

2. Western Washington. Logs, lumber, pulp, and paper constituted about two-fifths of the $3.6 billion in foreign exports from the other fifteen counties in western Washington in 1995. Other exports of significance included petroleum, processed food, machinery, and transportation and trade services involved with the movement of these goods to overseas markets. Overall, this region accounted for 12.8 percent of Washington's foreign exports. In spite of this relatively small share, regional foreign exports per capita, amounting to $3,008, were about the national average.

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[8]Had this study focused on 1992, when aerospace production was at a cyclical high, we would have concluded that the rapid expansion of international trade in Washington was the sole reason why the state grew faster than the nation between 1963 and 1992. Three years from now that will likely be the case again.

Figure 5

WASHINGTON STATE FOREIGN EXPORTS BY REGION, 1995
Billions of Dollars

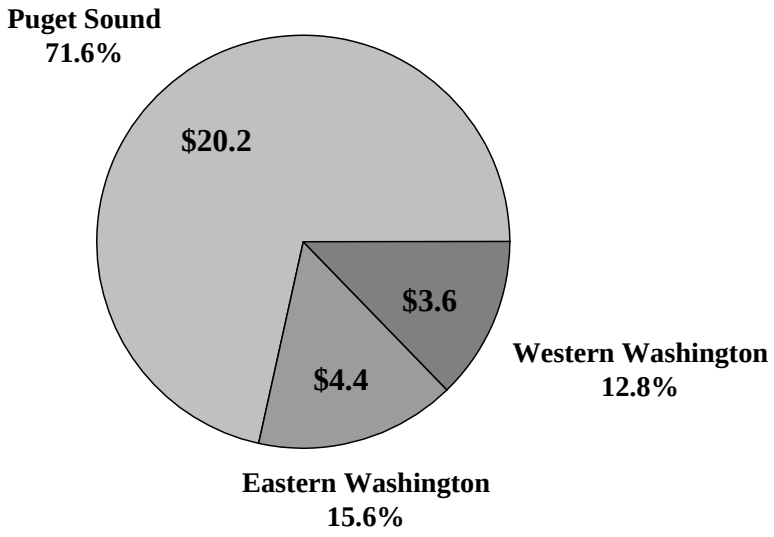

Figure 6

WASHINGTON STATE PER CAPITA
FOREIGN EXPORTS BY REGION, 1995

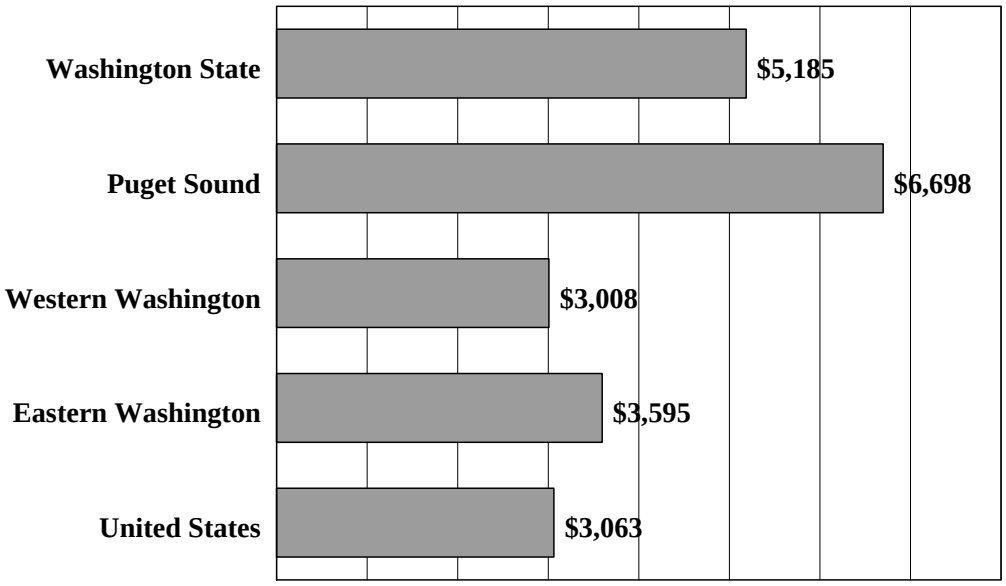

Table 10

WASHINGTON STATE EMPLOYMENT, PERSONAL INCOME, AND POPULATION BY REGION, 1995

	Puget Sound	Western Washington	Eastern Washington
Employment (thous.)	1,888	560	680
Proprietors	319	111	124
Wage and salary employees	1,568	449	555
Resources	6	9	37
Agriculture	3	5	36
Other resources	4	4	1
Manufacturing	211	65	59
Food products	17	8	17
Lumber and wood products	14	15	8
Paper products	5	10	2
Aerospace	79	0	1
Other manufacturing	96	31	31
Nonmanufacturing	1,060	264	349
Construction	76	27	25
Transportation and public utilities	87	16	19
Wholesale and retail trade	366	101	132
Finance, insurance, and real estate	93	17	20
Services	439	103	152
Government	291	112	110
Personal income (bils. $)	79.4	25.5	24.1
Per capita income ($)	26,396	21,327	19,721
Population, July 1 (thous.)	3,010	1,197	1,224
PERCENT OF STATE TOTAL			
Employment	60.4	17.9	21.7
Proprietors	57.6	19.9	22.4
Wage and salary employees	61.0	17.5	21.6
Resources	12.2	17.3	70.5
Manufacturing	63.1	19.4	17.5
Nonmanufacturing	63.4	15.8	20.9
Government	56.7	21.7	21.5
Personal income	61.5	19.8	18.7
Population	55.4	22.0	22.5

Table 11

WASHINGTON STATE FOREIGN EXPORTS IMPACT BY REGION, 1995

	Puget Sound	Western Washington	Eastern Washington
DIRECT ECONOMIC IMPACT			
Foreign exports (bils. $)	20.2	3.6	4.4
TOTAL ECONOMIC IMPACT			
Employment (thous.)	540	75	125
Proprietors	91	15	28
Wage and salary employees	449	60	97
Resources	2	2	15
Agriculture	1	1	15
Other resources	1	1	0
Manufacturing	86	21	17
Food products	3	2	3
Lumber and wood products	6	6	3
Paper products	1	3	1
Aerospace	48	0	1
Other manufacturing	28	10	9
Nonmanufacturing	305	26	50
Construction	12	2	2
Transportation and public utilities	23	3	4
Wholesale and retail trade	96	10	20
Finance, insurance, and real estate	22	2	3
Services	152	10	21
Government	57	11	15
Personal income (bils. $)	22.9	3.4	4.5
Population, July 1 (thous.)	867	162	228
PERCENT OF REGION TOTAL			
Employment	28.6	13.3	18.4
Proprietors	28.6	13.1	22.8
Wage and salary employees	28.6	13.4	17.4
Resources	20.3	20.9	40.7
Manufacturing	40.7	31.8	28.6
Nonmanufacturing	28.7	10.0	14.2
Government	19.6	10.1	13.9
Personal income	28.9	13.5	18.7
Population	28.8	13.5	18.6

The economic impact on western Washington, the region least dependent upon foreign exports, was still significant. The employment impact represented one out of every eight jobs in the region. In absolute numbers, the impact, amounting to 75,000 jobs, about equaled the total employment of the City of Vancouver, the region's largest city.

3. Eastern Washington. Eastern Washington's foreign exports made up 15.6 percent of the state total in 1995. Exports of raw and processed farm products, led by shipments of wheat and apples, totaled $1.4 billion. The eastern region also exported chemical products (e.g., fertilizers), aluminum, and nonelectrical machinery (e.g., computer components). On a per capita basis, eastern Washington exported $3,595 of goods and services to other countries, roughly $500 above the U.S. standard.

   In eastern Washington, the impact of foreign exports was substantial, amounting to 125,000 jobs or nearly one out of every five jobs in the 19-county region. In terms of its dependency on international trade, that put eastern Washington at the same place that the state was ten years ago, when foreign exports supported 18 percent of the state's total employment.

5. PROSPECTS FOR FOREIGN EXPORTS

Ten-Year Outlook

Economists are generally optimistic about the world economy. Despite difficulties in some regions, like eastern Europe and Africa, economic recoveries in western Europe and Japan and rapid growth in much of mainland Asia promise a moderate but relatively stable expansion for the next ten years. One analyst describes the prognosis as the "no boom, no bust" scenario.

In this environment, U.S. exports will expand at a 7 percent annual rate between 1995 and 2005, according to experts. The forecast for Washington State is about the same.[9] After adjustments for inflation, foreign sales of Washington produced goods and services will nearly double, rising from $28.2 billion in 1995 to $55.6 billion in 2005 (Table 12).

Foreign export demand will continue to be a major impetus to long-run growth in Washington. Foreign exports will expand at nearly twice the rate of total exports. By 2005, foreign markets will account for 42 percent of the state's external sales, compared to 32 percent in 1995. As a consequence, Washington employment directly and indirectly supported by sales abroad will rise to about one out of every three jobs.

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[9]The forecasts presented here are based on three considerations: (1) past trends; (2) the long-term outlook for U.S. exports; and (3) anecdotal information from various reports and discussions with industry experts. Having not been prepared with formal forecasting techniques, these projections should not be accorded undue precision. It should be pointed out, however, that ten years ago we predicted that Washington foreign exports would increase at a 6.0 percent annual rate between 1985 and 1995. The actual growth rate turned out to be 6.3 percent, pretty much on the mark. We had reasonably good long-term forecasts for agriculture, food products, and aerospace. But we overestimated the growth in forest producs, due to unforeseen timber harvest restrictions, and underestimated the growth in services, due to a failure to anticipate the success of Microsoft.

Products and Markets

Since one-half of the foreign export volume is currently divided among aircraft, forest products, and agricultural goods, future expansion will still largely depend upon the success of these products. Considering the turnaround in the aircraft market and the takeover of the McDonnell Douglas Corporation, the long-run outlook for Boeing is bright. Foreign aircraft deliveries are forecast to rise at a 7.2 percent annual rate, reaching $19 billion in 2005. Expectations for forest products are less bullish, primarily because of a shortage of timber available for harvest. Pulp and paper exports will expand at nearly a 3 percent rate, while lumber and wood products exports will grow at less than half that rate. Processed goods rather than raw commodities will provide most of the growth for agricultural exports. Between 1995 and 2005, foreign exports of processed food from Washington will nearly double, while crop and livestock products exported directly from the farm will increase by only one-third.

Table 12

WASHINGTON STATE FOREIGN EXPORTS BY INDUSTRY OF ORIGIN, 1985-2005

Millions of 1995 Dollars

				Average Annual Percent Change	
	1985	1995	2005	1985-95	1995-05
Resources	731	1,060	1,381	3.8	2.7
Agriculture	714	1,040	1,357	3.8	2.7
Other resources	17	20	24	1.6	2.0
Manufacturing	11,299	18,540	35,318	5.1	6.7
Food products	579	1,266	2,122	8.1	5.3
Lumber and wood products	1,707	1,897	2,095	1.1	1.0
Paper products	909	1,230	1,590	3.1	2.6
Chemical products	157	219	315	3.4	3.7
Petroleum products	145	373	563	9.9	4.2
Primary metals	485	704	858	3.8	2.0
Nonelectrical machinery	302	990	2,993	12.6	11.7
Electrical machinery	142	597	1,521	15.4	9.8
Aerospace	6,048	9,490	19,020	4.6	7.2
Other manufacturing	825	1,775	4,241	8.0	9.1
Nonmanufacturing	2,071	6,917	16,774	12.8	9.3
Transportation services	685	1,387	2,555	7.3	6.3
Wholesale and retail trade	682	1,408	2,545	7.5	6.1
Services	704	4,122	11,674	19.3	11.0
Other	1,173	1,644	2,209	3.4	3.0
Foreign exports	15,273	28,161	55,682	6.3	7.1

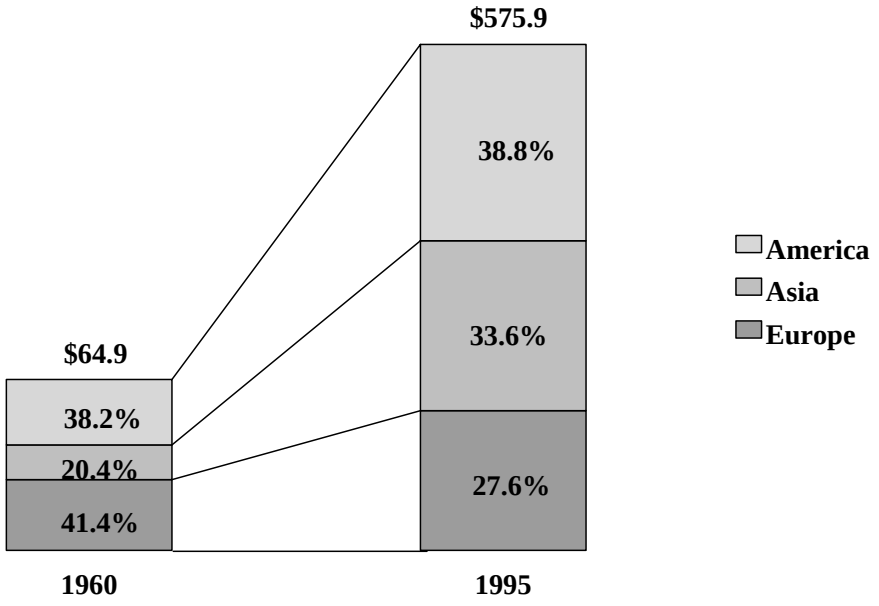
Outside of these major export categories, the future is less clear, especially for those industries whose overseas markets have only recently developed. Included among these relatively small but fast growing exporting industries in Washington are industrial machinery, electronics, and scientific instruments. For these industries, foreign sales over the next ten years are expected to grow at a combined rate of 10 percent per year. The recent decision by Intel Corporation to build a plant south of Tacoma is evidence of the efficacy of this buoyant projection.

In the service industries, trade and transportation should grow more or less along with merchandise exports, averaging around 6 percent per year. Foreign travel, which in the past few years has slowed, is also expected to see a 6 percent growth rate. Largely on the bet that Microsoft will continue to enjoy success, foreign exports of services are projected to expand at a 11 percent rate.

Looking at Washington's future trade with different regions of the world, there will be little shift away from the state's reliance on Pacific Rim nations, especially those in Asia. As in the past three decades, Asia is expected to be the fastest growing market for U.S. goods and services in the world (Figure 7). U.S. exports of goods in 1995 dollars increased nine-fold between 1960 and 1995, rising from $65 billion to $576 billion. Trade with Asia, on the other hand, increased nearly fifteen times. As a consequence, with 34 percent of the total market in 1995, Asia has overtaken Europe as the second most important customer for U.S. goods. Continuation of this growth pattern suggests that by 2005 Asia will have become the nation's largest export market.

Figure 7

U.S. EXPORTS OF GOODS BY REGION, 1960-1995
Billions of 1995 Dollars



Japan, South Korea, and Taiwan will remain Washington's major Asian customers. At the same time, the People's Republic of China, which takes control of Hong Kong later this year, will finally emerge as an important market. The potential of China is mind-boggling. Already the state's number six trading partner, China's economy is presently just one-sixth the size of the U.S. economy. Yet, during the next ten years, China's real Gross Domestic Product is expected to expand by $1.3 trillion, about the same as the growth of U.S. real Gross Domestic Product. In other words, China will have as much new business to offer Washington producers as the United States.

6. POLICY IMPLICATIONS

Maintaining Competitiveness

If there is a single conclusion to be drawn from this study, it is the following: no state derives more economic benefit from the production of goods and services for foreign markets than Washington State. Other states, such as California and New York, have greater volumes of foreign exports, but no state has a higher percentage of its jobs linked to the world market. Moreover, this high degree of dependency has worked in Washington's favor. Foreign export expansion is the principal reason why the Washington economy has grown faster than the national economy over the past three decades.

In the future, it is imperative that Washington continues to maintain an environment that fosters international trade. Many of the forces that have a bearing upon the performance of export industries are beyond the control of the people and institutions of the state. For example, overseas sales of wheat are affected by local climate, world grain production, and currency exchange rates. On the other hand, there are factors affecting Washington's competitiveness, such as the productivity of its labor force and the efficiency of its transportation system, that can be influenced by local business, labor, and government. Factors that determine the competitiveness of Washington's export activity can be grouped into five general categories:

1. Labor force. Washington's most important economic resource is its people. If the state is to remain competitive in world markets, this must be achieved primarily through the industry and creativity of its workers. Typically, payments to labor constitute the major cost of production. While wage rates are relatively high in some industries, this is not necessarily a stumbling block to export expansion. As long as Washington workers are more productive than workers elsewhere, businesses in the state can afford to pay higher wages and still not sacrifice their competitive edge in the market place.

2. Natural resources. Washington is blessed with an abundant supply of natural resources, which is reflected in many of the products that it exports. More than two-fifths of the state is covered by forests. Washington possesses 16 million acres of farmland, of which 1.5 million acres are under irrigation. The state also has one-fourth of the nation's developed capacity for hydroelectric power, resulting in the cheapest electricity in the United States. But the great and competing demands placed on forests, farmland, and water have raised difficult questions regarding their use. How the people of Washington answer these questions will have a profound and lasting effect on the economy.

3. Public services and costs. State and local governments are the primary institutions through which the people of Washington can affect the

competitiveness of export activity. In this regard, the mission of the public sector includes providing high quality education, maintaining a good transportation system, fostering a healthy business climate, and keeping the cost of government services as low as possible.

4. Accessibility to markets. One factor over which Washington has little influence is its proximity to external markets. Distant customers are difficult to serve at competitive prices because of the additional costs of transportation, marketing, and customer service. From the standpoint of U.S. markets, the state is at a distinct competitive disadvantage. With the exception of Alaska and Hawaii, Washington is the farthest place from the national center of population. On the other hand, Washington is the closest mainland point to Asia, the fastest growing part of the world. And accessibility, whether to Asia or the rest of the United States, can be improved with efficient highways, railroads, airports, and seaports.

5. Technology. Technological change takes several forms, including new products, more efficient production methods, and innovative management systems. No matter what advantages Washington has in other factors, without an advancing technology the state will ultimately find itself unable to compete in world markets.

Two Other Measures

There are two other measures that Washington can take to promote international trade. Foremost is the adoption of a strong position on open trade. Certainly, trade tariffs and quotas would salvage some jobs at home. Moreover, such restrictions would be tend to be politically expedient when an identifiable group of workers and businesses was affected. However, looking at the other side of the ledger, such measures could not be implemented without great costs. A reduction in imports to protect domestic producers would mean not only higher prices to U.S. consumers but fewer dollars abroad and a decline in the demand for U.S. exports. Protectionism in the U.S. would also elicit retaliatory measures from its trading partners. Thus, attempts to save American jobs in the automobile industry could cost jobs in the aircraft industry. In the long run, all parties would stand to lose by actions designed to restrict trade. But the Washington economy, because of its strong foreign market orientation, would be one of the biggest losers.

A second function of the state is to facilitate the international flow of information about Washington's export possibilities. If buyers are not acquainted with Washington goods and services, these products will tend to be overlooked in the market place. In light of the fact that much of the potential for future growth in foreign sales lies outside the realm of products usually associated with the state (aircraft, wheat, logs, apples, software), the need for product information is particularly acute. Information in general plays a key role in the efficient operation of markets, and it is in the public interest, especially as a means of increasing export trade, to enhance its dissemination.

Appendix A
TECHNICAL NOTES

Appendix A
TECHNICAL NOTES

A-1. DEFINITIONS AND CONVENTIONS

Total Exports

In this study, a distinction is made between total exports and foreign exports. Total exports, or simply exports, refer to goods and services produced in Washington State and sold in *all markets outside the state*, including foreign countries, the rest of the United States, and the federal government. Total exports are measured in 1995 dollars.

Following the accounting conventions of input-output tables, exports are measured in producers' prices. Each transaction represents the revenue earned by the producer and not the cost incurred by the purchaser. To determine the value of exports in purchasers' prices, it is necessary to add the value of trade and transportation margins to producers' prices. These distribution costs are shown as part of the sales of services from the trade and transportation industries. This accounting convention is required for impact analysis.

Foreign Exports

Foreign exports encompass only sales made to customers residing outside the United States. More specifically, foreign exports include the following:

1. The value of goods produced in Washington State and sold in foreign markets.

2. The value of services produced in Washington and sold in foreign markets, including the value of transportation and trade services required for the distribution of exported goods.

3. The value of foreign travel expenditures in Washington.

According to the above definition, foreign exports include the value of Washington trade and transportation services associated with the distribution of goods sold abroad, even if the goods themselves are not produced in the state. For example, the value of services performed by Washington ports in the transshipment abroad of corn grown in the midwest is counted as part of Washington foreign exports.

Foreign travel exports count all in-state expenditures by non-U.S. citizens traveling to Washington. They include estimates of travel expenditures by Canadians for shopping trips, even if the stay is not overnight.

Like total exports, foreign exports are valued in 1995 dollars at producers' prices. As a consequence, these figures are not strictly comparable to the U.S. Bureau of the Census estimates of merchandise exports shipped through the Washington Customs District, which are valued free-alongside-ship (f.a.s.). F.a.s. measurements, which are higher, include the distribution costs associated with the movement of the goods from the point of production to the port of exit.

Census Bureau estimates of customs district exports further differ from the ones used in this study because they include goods produced elsewhere but shipped through the state as well as exclude goods produced in Washington but shipped through customs districts in other states. As noted in the following section, this study makes use of export estimates prepared by the Massachusetts Institute for Social and Economic Research (MISER), which attempts to measure exports by state of origin.

Gross State Product

Gross State Product is Washington's counterpart to U.S. Gross Domestic Product (GDP). It is the value of Washington's total production of goods and services for final use. Gross State Product can be measured in two ways. First, it is the sum of goods and services purchased by households (personal consumption expenditures), government (federal, state, and local government expenditures), the capital sector (gross private domestic investment), and the foreign sector (net exports). Second, it is the sum of value added (gross product originating) in industry, households, and government. Gross State Product, which in this study is valued in 1995 dollars, is the most comprehensive indicator of economic activity in the state.

Output

Except for wholesale and retail trade and transportation services, industry output is the value of production or sales. Output is valued at producers' prices in 1995 dollars. For trade and transportation, output is the value of trade and transportation margins (mark-ups). Output measured in purchasers' prices equals output measured in producers' prices plus trade and transportation margins.

Employment

Adopting the concept used by the U.S. Bureau of Economic Analysis, employment is the annual average number of full and part-time wage and salary employees and self-employed workers (proprietors). In a given year, total employment exceeds the number of persons employed, as measured by the U.S. Bureau of Labor Statistics, because of workers holding more than one job.

Personal Income

The major components of personal income are labor income, property income (dividends, interest, and rent), transfer payments, and contributions to social insurance. Labor income includes wages, salaries, proprietors' income, and other labor income earned by job-holders. Personal income is valued in 1995 dollars. Following standard conventions, the U.S. implicit price deflator for personal consumption expenditures (1995=1.000) is used to convert current-dollar personal income estimates into 1995 dollars.

Population

Population is defined as the number of persons residing in an area (state or region) on the first day of July. The source of population estimates is the U.S. Bureau of the Census. Note that the population numbers for Washington differ slightly from those reported by the Washington State Office of Financial Management (OFM), which makes its own population estimates for state and counties.

Table A-1

CLASSIFICATION OF INDUSTRIES IDENTIFIED IN WASHINGTON PROJECTION AND SIMULATION MODEL IV

Industry	SIC Code
Agriculture	01-02
Forestry and fishing	08-09
Mining	10-14
Food products	20
Apparel	23
Lumber and wood products	24
Paper products	26
Printing and publishing	27
Chemical products	28
Petroleum products	29
Stone, clay, and glass products	32
Primary metals	33
Fabricated metals	34
Nonelectrical machinery	35
Electrical machinery	36
Aerospace	372,376
Shipbuilding	373
Other transportation equipment	371,374,375,379
Other manufacturing	22,25,30,31,38,39
Construction	15-17
Transportation services	40-42,44-47
Communications	48
Utilities	49
Wholesale and retail trade	50-59
Finance, insurance, and real estate	60-67
Services	07,70-89

Industry Classification

For this analysis, foreign exports are initially measured for 26 industries. Table A-1 shows the definition of each of these industries according to the Standard Industrial Classification (SIC) code. Exports are then combined into the 13 industrial categories shown in the report.

A-2. FOREIGN EXPORT ESTIMATES

Goods

The initial step in this analysis estimates Washington State foreign exports by producing industry. Although the procedure results in annual estimates from 1960 to 1995 (see Appendix B), it focuses upon 1963, 1967, 1972, 1977, 1982, 1987, 1992, and 1995. The first three years and the fifth and sixth years are the dates of the five Washington input-output studies, which are a principal source of information. The input-output tables represent the only comprehensive attempts to measure foreign sales by industry. The year 1995 is also included since it is the most recent year with sufficient published data upon which to make reasonable estimates of foreign exports. The years 1977 and 1992 are included in the analysis to give "mid-way" points in the foreign export series. The remaining estimates are derived by interpolation.

Table A-2

ESTIMATES OF WASHINGTON STATE AGRICULTURAL FOREIGN EXPORTS

	Input-Output Estimate (mils. $)	Input-Output Estimate (mils. $95)	MISER Estimate (mils. $95)	Survey Estimate (mils. $95)	Final Estimate (mils. $95)
1963	145	446	NA	NA	466
1967	157	451	NA	NA	489
1972	259	567	NA	NA	567
1977	NA	NA	NA	NA	583
1982	545	626	NA	NA	630
1987	424	505	NA	NA	709
1992	NA	NA	1,986	NA	928
1995	NA	NA	3,741	1,040	1,040

The estimating procedure essentially involves the reconciliation of Washington foreign trade information from various published sources. Along with the input-output studies, these include the U.S. Bureau of the Census ("Survey of the Origin of Exports by Manufacturing Establishments"), the U.S. Department of Agriculture ("Foreign Agricultural Trade of the United States"), and the Massachusetts Institute for Social and Economic Research ("Washington Exports by Industry").

From the standpoint of accurately measuring Washington foreign exports, each of these sources has its limitation. For example, the input-output data, which represent our starting point, present three problems. First, the figures are given in current dollars, thereby necessitating a conversion

into constant 1995 dollars. National price deflators developed by the U.S. Bureau of Labor Statistics are used for this purpose. Second, since the input-output estimates are based on sample surveys, each export estimate is subject to measurement error. Third, the last published input-output table is now ten years old. In recognition of these problems, the input-output estimates are checked for reasonableness against other foreign trade data.

Using agriculture as an example, Table A-2 illustrates the procedure for estimating foreign exports of goods. In addition to the input-output data, there is export information from MISER and the U.S. Department of Agriculture. Both of these sources, however, grossly over-estimate Washington agricultural foreign exports. The MISER series, for example, imply that Washington farmers sold nearly three-fourths of their total product abroad in 1995 (Note that the other MISER series seem to be more accurate.). To improve upon the estimate, we conducted a survey of the state's agricultural commissions (e.g., the Washington State Apple Commission), inquiring as to the percentage of each product sold in other countries. Applying each product's percentage (e.g., 20 percent for apples) to its value of production ($1,018 million) resulted in an estimate of foreign exports ($204 million). The estimated value of total agricultural foreign exports amounted to $1,040 or roughly one-fifth of the total value of Washington farm production in 1995. As evident in the table, this figure is line with all but one of the earlier input-output estimates, the 1987 figure appearing to be low.

Services

In contrast to the abundant data on the export of goods, there is relatively little information on services exported from Washington State. Fortunately, two recent studies permit us to make reasonable estimates of the exports of services for 1995.

Three types of service exports are estimated: (1) trade and transportation charges associated with the delivery of goods from domestic producers to foreign consumers; (2) foreign visitor expenditures; and (3) other exported services, such as financial and business services (including computer software). As with goods, the objective of the service export estimating procedure is to reconcile the input-output measurements with those based on other sources of information. Principal data sources include the 1987 U.S. input-output study, which reports wholesale trade margins and transportation costs associated with foreign sales for 64 national industries, a study by Dean Runyon Associates ("International Visitors to Washington, 1991-1994"), the national income and products accounts, which show service exports for the U.S. economy back to 1958, and a University of Washington study of producer services by W. B. Beyers and D. P. Lindahl ("Producer Services Development Processes").

With regard to transportation and trade margins, estimates based on national data were compared to estimates from the Washington input-output tables. Since the two sets of estimates were reasonably compatible, the national-based estimates were used for each year after 1987, the year of the last input-output table.

The study of international visitors reports the number of Canadian and non-Canadian visitors to Washington and the United States. Multiplying per visitor expenditure estimates obtained from Statistics Canada and the U.S. Bureau of Economic Analysis by the number of visitors, we obtained an estimate of total foreign travel exports. In 1995, Washington foreign travel expenditures amounted to $1,764 million or 3.0 percent of the national total. This compares with the state's 2.1 percent share of national population, indicating that Washington is a major destination for foreign travelers, which seems reasonable considering the state's proximity to Canada. Information from a variety of studies ("Impact of Foreign Visitors on State Economies,

1983," "The Economic Impact of the Washington State Convention and Trade Center," and "1987 Input-Output Tables for Hawaii State, Hawaii County, Kauai County, and Maui County") yielded estimates of Washington foreign visitor expenditures by industry (e.g., hotels and lodging, eating and drinking places, and transportation services).

The study by Beyers and Lindahl involved, among other things, a survey of 600 Washington firms classified as producer services (i.e., establishments that sell specialized services primarily to other businesses). Among other things, businesses were asked about the relative size of their domestic and international markets. After grouping the responses by industry and recognizing the fact that some service industries, such as personal services, do not export, the sample estimate of foreign market share for each industry was multiplied by that industry's output to obtain an estimate of its foreign exports. Foreign exports from services (excluding wholesale trade, transportation services, travel, and computer software) totaled $1,003 million in 1995. When computer software is added, the total becomes $3,493 million.

A-3. IMPACT ANALYSIS METHODOLOGY

Input-Output Models

The input-output model, as represented by the table of output (production or sales), employment, and income multipliers, is the analytical method most commonly used to measure economic impacts. Five survey-based input-output models for Washington State have been constructed, the most recent one being for 1987 (Chase, Bourque, and Conway, 1993).

An input-output model shows how industries and households in the economy are interrelated. When one industry expands or declines, the model estimates the production, employment, and income changes in other industries affected directly or indirectly by the demands of the original industry. For example, a rise in aerospace exports raises the demand for locally produced fabricated metals. Increased activity in aerospace and fabricated metals leads to higher levels of employment and income in those industries, which in turn mean more spending for consumer goods, among other things.

Although the Washington input-output model attempts to capture the interactions among industries and households in the state, it still represents a somewhat simplified depiction of economic behavior. In particular, the model is subject to four restrictions that affect the precision of the impact estimates: (1) a static depiction of impacts; (2) constant input-output coefficients; (3) a simple specification of the interactions among production, income, and personal consumption; and (4) a neglect of the effects of induced private investment, state and local government spending, and population change on economic activity. In estimating impacts, the fourth restriction is the most significant. Since the input-output model does not take into account induced investment, public expenditures, or migration, it tends to significantly understate the magnitude of economic impacts. For a more complete account of the properties of the Washington input-output model in the context of an impact study, refer to Conway (1991).

Washington Projection and Simulation Model

The Washington Projection and Simulation Model (Bourque, Conway, and Howard, 1977, and Conway, 1990) is a regional interindustry econometric model designed for forecasting and impact analysis. With a comprehensive specification of the structure of the state economy, WPSM is formulated to overcome many of the shortcomings of the input-output model. WPSM

Table A-3

FEATURES OF WASHINGTON PROJECTION AND SIMULATION MODEL IV

Projection Horizon

1-25 years

Model Size

151 endogenous variables
68 exogenous variables
123 behavioral equations
28 identities

Industry Detail

26 industries, each having projections of
output
employment (wage and salary employees and proprietors)
labor income (wages, salaries, proprietors' income, and other labor income)

Other Selected Endogenous Variables

Gross State Product
personal consumption expenditures
housing construction
nonresidential investment
state and local government expenditures
exports (including federal government expenditures)
imports
labor force
unemployment rate
personal income
per capita income
net migration
population by age and sex
Seattle consumer price index
price of single-family home

IV, whose structure is described here, is the fourth generation of a model originally developed at the University of Washington.

The features of WPSM IV are shown in Table A-3. The model generates economic forecasts on an annual basis, the projection horizon extending up to 25 years. The system of equations is formulated to predict the behavior of 151 endogenous variables. The model consists of 123 behavioral equations, 28 accounting identities, and 68 exogenous variables, the last of which primarily express economic conditions in the United States. WPSM identifies 26 Washington industries (Table A-1) and three public sectors. For each industry, there are projections of output, employment, and labor income. Among the other economic and demographic variables predicted by the model are Gross State Product, personal consumption expenditures, investment, state and local government expenditures, labor force, the unemployment rate, personal income, population by age and sex, and the Seattle consumer price index.

Impact Estimation Procedure

This study draws upon the simulation capabilities of the Washington Projection and Simulation Model to measure the direct and indirect economic impact of foreign exports. The impact estimation procedure is, in general, a straightforward exercise. Employing WPSM, the behavior of the state economy is first simulated with foreign exports (including the associated employment and labor income) to produce a baseline projection over a period of time. The simulation is then repeated but without foreign exports to yield a conditional projection. The difference between the two sets of projections is a measure of foreign exports' total (direct and indirect) impact on the state economy. Since WPSM is a comprehensive model, the impact can be expressed in terms of employment and income by industry, population, personal income, household expenditures, state and local government spending, and fixed investment, among other economic and demographic variables.

It should be emphasized that the impact on employment or income should not be interpreted as the number of jobs or the amount of income that would be lost if foreign exports were suddenly to decline to zero. There would be substantial job and income losses, but the economy would make adjustments to cushion the impact. For example, regional prices and wages would tend to fall, or at least not rise as rapidly, causing greater internal use of the commodities and labor formerly involved in foreign trade. The impacts estimated in this investigation should therefore be interpreted only as the employment and income *related* to foreign exports given the structure of the economy--its prices, interindustry relationships, productivity, wage rates--at the time of the impacts.

Employment Multiplier

Employment multipliers are one means of standardizing the measurements of economic impacts for purposes of comparison. The employment multiplier for a given industry or sector of the economy is defined as the ratio of its total employment impact to its direct employment impact. In 1995, for example, foreign exports of $28.2 billion directly supported 204,000 jobs in Washington and indirectly supported 536,000 jobs in other state industries, according to a simulation with WPSM (see Table 6). The foreign export employment multiplier is 3.6 (=[204+536]/204). In this case, the multiplier can be interpreted to mean that, on average, each foreign export job indirectly supported 2.6 other jobs in the state economy. The foreign exports wage and salary employment multiplier, which excludes proprietors, is 3.3 (=605/185). These multipliers are about the same size as the average multipliers for the economy as a whole, which

is not surprising considering the fact that foreign exports involve a representative cross-section of Washington's basic industries.

Regional Impact

Estimating the regional economic impact of Washington State foreign exports entails four steps:

1. Estimate the foreign exports and direct employment by region.

2. Using economic base models for each region, estimate the indirect employment impact of foreign exports.

3. Given the total employment impact, estimate the personal income and population impacts.

4. Reconcile the regional impacts with the state impact.

Economic base models, specified in terms of employment, were constructed for three regions: Puget Sound; the rest of western Washington; and eastern Washington. Following standard procedures in building such models, an employment multiplier for each non-basic (non-exporting) industry in each region was estimated. These multipliers, combined with the estimate of the region's direct employment engaged in foreign export production, led to an estimate of the region's total employment impact. Income-employment and population-employment ratios were then applied to derive the personal income and population impacts of foreign exports.

The final step of the procedure is required because economic base models do not allocate to the three regions all of the indirect employment impact estimated at the state level by WPSM. This is because regions within Washington trade goods and services among themselves, a phenomenon not depicted by these models. The most notable of these trade flows are the sale of specialized financial and business services from Puget Sound to the other two regions and the sale of state government services from western Washington (which includes Olympia) to the rest of the state.

Since the economic base models are relatively simple, at least compared to WPSM, they are subject to appreciable measurement error. Nevertheless, the results obtained from the models still constitute a reasonable representation of the geographical distribution of the impact of foreign exports.

A-4. REFERENCES AND DATA SOURCES

Beyers, W. B., P. J. Bourque, W. R. Seyfried, and E. E. Weeks. *Input-Output Tables for the Washington Economy, 1967*, Seattle: Graduate School of Business Administration, University of Washington, 1970.

Beyers, W. B. and D. P. Lindahl. "Producer Services Development Processes," National Science Foundation (SES 9224515), forthcoming.

Bourque, P. J. *The Washington State Input-Output Study for 1982*. Seattle: Graduate School of Business Administration, University of Washington, 1987.

Bourque, P. J. and E. E. Weeks. *Detailed Input-Output Tables for Washington State*. Pullman, Washington: College of Agriculture, Washington State University, 1967.

Bourque, P. J. and R. S. Conway, Jr. *The 1972 Washington Input-Output Study*, Seattle: Graduate School of Business Administration, University of Washington, 1977.

Bourque, P. J., R. S. Conway, Jr., and C. T. Howard. *The Washington Projection and Simulation Model*, Seattle: Graduate School of Business Administration, University of Washington, 1977.

Chase, R. A., P. J. Bourque, and R. S. Conway, Jr. *The 1987 Washington State Input-Output Study*. Olympia: Washington State Office of Financial Management, 1993.

Conway, R. S., Jr. "Foreign Exports and the Washington Economy," Washington State Department of Trade and Economic Development, 1987.

Conway, R. S., Jr. "International Trade and the Washington State Economy: The Impact of Foreign Exports, 1963-1985," Washington State Department of Commerce and Economic Development, 1978.

Conway, R. S., Jr. "Seattle City Light Economic and Demographic Model: Economic and Demographic Data Base," Seattle City Light, 1996.

Conway, R. S., Jr. "The Economic Impact of the Washington State Convention and Trade Center," Washington State Convention and Trade Center Board, 1982.

Conway, R. S., Jr. "The Microsoft Economic Impact Study," Microsoft Corporation, 1996.

Conway, R. S., Jr. "The Washington Projection and Simulation Model: A Regional Interindustry Econometric Model," *International Regional Science Review*, 13 (1990), 141-165.

Conway, R. S., Jr. "1987 Input-Output Tables for Hawaii State, Hawaii County, Kauai County, and Maui County," Hawaii Department of Business, Economic Development, and Tourism, 1994.

Dean Runyon Associates, "International Visitors to Washington, 1991-1994," Washington State Department of Community, Trade, and Economic Development, 1995.

Massachusetts Institute for Social and Economic Research. "Washington Exports by Industry, 1995," computer print-out, June 1996.

Microsoft Corporation. "Microsoft Corporation Annual Report," annual issues.

The Boeing Company. "Annual Report," annual issues.

The National Tour Association and the International Association of Convention and Visitor Bureaus. "1995 Economic Impact of Leisure Travelers and Group Tour Takers," April 1996.

U.S. Bureau of Economic Analysis. "Benchmark Input-Output Accounts for the U.S. Economy, 1987," *Survey of Current Business* (April 1994), pp. 73-115.

U.S. Bureau of Economic Analysis. *Survey of Current Business*, various issues.

U.S. Bureau of Economic Analysis. "U.S. International Sales and Purchases of Private Services," *Survey of Current Business* (November 1996), pp. 70-112.

U.S. Bureau of Economic Analysis. "U.S. International Transactions," *Survey of Current Business* (July 1996), pp. 56-86.

U.S. Bureau of Economic Analysis. "Washington Full-Time and Part-Time Wage and Salary Employees, 1969-1995," computer print-out, August 1996.

U.S. Bureau of Economic Analysis. "Washington Personal Income by Major Source and Earnings by Industry, 1958-1995," computer print-out, August 1996.

U.S. Bureau of Economic Analysis. "Washington Total Full-Time and Part-Time Employment, 1969-1995," computer print-out, August 1996.

U.S. Bureau of Economic Analysis. "Washington Wage and Salary Disbursements, 1958-1995," computer print-out, August 1996.

U.S. Bureau of the Census. "Survey of the Origin of Exports by Manufacturing Establishments," *Current Industrial Reports*, various years.

U.S. Department of Agriculture. "Foreign Agricultural Trade of the United States," various years.

U.S. Department of Commerce. "State Export Facts: 1987-94," 1994.

U.S. Department of Commerce. "Washington Export Facts," various years.

U.S. Forest Service. *Production, Prices, Employment, and Trade in Northwest Forest Industries*, annual issues.

U.S. Travel Data Center. "Impact of Foreign Visitors on State Economies, 1983," Washington, D.C., 1985.

Vibber, G. R. "International Trade and the Washington State Economy, 1960-1972," Washington State Department of Commerce and Economic Development, 1974.

Washington State Department of Agriculture. "Washington Agricultural Statistics," annual issues.

Washington State Department of Community, Trade, and Economic Development. "Washington State Imports and Exports," various years.

Washington State Employment Security Department. "Employment and Payrolls in Washington State by County and Industry," quarterly issues.

Washington State Office of Financial Management. "1995 Population Trends for Washington State," 1995.

Appendix B

WASHINGTON STATE FOREIGN EXPORTS

TABLE B-1. WASHINGTON STATE FOREIGN EXPORTS (MILLIONS OF 1995 DOLLARS)

	1960	1961	1962	1963	1964	1965
FOREIGN EXPORTS	2677.5	2772.8	3030.6	3102.9	3252.1	3529.8
GOODS	2249.9	2329.1	2557.9	2622.7	2753.6	3000.7
RESOURCES	428.9	424.0	447.7	469.6	453.5	440.3
AGRICULTURE	425.8	420.9	444.3	465.9	449.7	436.2
FORESTRY AND FISHING	1.3	1.2	1.4	1.5	1.7	1.8
MINING	1.8	1.9	2.0	2.1	2.1	2.3
MANUFACTURING	1540.0	1613.0	1793.8	1831.9	1967.6	2200.8
FOOD PRODUCTS	106.0	106.2	108.8	108.8	109.1	108.5
APPAREL	0.4	0.4	0.4	0.4	0.4	0.3
LUMBER AND WOOD PRODUCTS	362.8	362.1	382.1	401.6	526.9	625.9
PAPER PRODUCTS	220.3	230.4	238.0	252.8	286.2	317.5
PRINTING AND PUBLISHING	0.0	0.0	0.0	0.0	0.0	0.0
CHEMICAL PRODUCTS	9.5	10.3	10.7	11.3	14.5	13.2
PETROLEUM PRODUCTS	4.8	4.8	4.7	5.0	5.6	5.6
STONE, CLAY, AND GLASS PRODUCTS	0.4	0.4	0.4	0.5	0.9	1.5
PRIMARY METALS	223.3	216.9	227.1	263.4	271.4	250.6
FABRICATED METALS	8.8	8.9	9.5	8.0	8.2	10.1
NONELECTRICAL MACHINERY	15.1	14.4	16.7	18.0	24.8	33.0
ELECTRICAL MACHINERY	2.0	2.0	2.1	2.1	3.0	4.3
AEROSPACE	564.7	634.9	768.6	733.7	687.2	799.9
SHIPBUILDING	1.5	1.9	2.3	2.3	3.7	4.5
OTHER TRANSPORTATION EQUIPMENT	18.8	17.8	20.6	22.4	22.4	21.0
OTHER MANUFACTURING	1.6	1.6	1.7	1.7	3.2	5.0
OTHER GOODS (SCRAP)	160.1	166.4	177.4	179.7	185.7	197.7
NONMANUFACTURING*	120.9	125.7	139.0	141.5	146.9	161.9
TRANSPORTATION SERVICES	54.9	56.8	62.4	64.0	67.2	73.2
WHOLESALE TRADE	66.0	68.8	76.6	77.5	79.6	88.7
SERVICES	427.6	443.7	472.7	480.2	498.5	529.1
TRANSPORTATION SERVICES	58.3	60.6	64.6	65.5	67.7	72.0
WHOLESALE TRADE	18.6	18.7	19.5	21.1	24.0	24.1
TRAVEL	135.1	140.4	149.7	151.6	156.7	166.8
TRANSPORTATION SERVICES	12.7	13.2	14.1	14.3	14.7	15.7
EATING AND DRINKING PLACES	25.0	26.0	27.7	28.1	29.0	30.9
HOTELS AND LODGING	28.6	29.7	31.6	32.1	33.1	35.3
OTHER SERVICES	17.5	18.2	19.4	19.6	20.3	21.6
OTHER	51.3	53.3	56.9	57.6	59.5	63.4
COMPUTER SOFTWARE	NA	NA	NA	NA	NA	NA
OTHER SERVICES	215.6	224.0	238.9	242.0	250.1	266.2
FINANCE, INSURANCE, AND REAL ESTATE	17.0	17.7	18.8	19.1	19.7	21.0
BUSINESS AND PROFESSIONAL SERVICES	6.3	6.6	7.0	7.1	7.3	7.8
MISCELLAENOUS SERVICES	2.8	2.9	3.1	3.1	3.2	3.4
OTHER (ROYALTIES, FEDERAL RECEIPTS)	189.5	196.9	209.9	212.7	219.8	233.9

*TRANSPORTATION AND TRADE ASSOCIATED WITH DISTRIBUTION OF WASHINGTON PRODUCED GOODS.

TABLE B-1. WASHINGTON STATE FOREIGN EXPORTS (MILLIONS OF 1995 DOLLARS)

	1966	1967	1968	1969	1970	1971
FOREIGN EXPORTS	4275.7	4766.0	5826.7	6594.5	6469.1	6258.8
GOODS	3691.7	4145.1	5164.0	5890.2	5730.4	5501.4
RESOURCES	450.8	493.1	485.8	460.2	490.5	544.5
AGRICULTURE	446.8	488.9	481.2	455.6	486.0	540.2
FORESTRY AND FISHING	1.7	1.7	1.9	1.9	1.8	1.8
MINING	2.3	2.5	2.7	2.7	2.7	2.5
MANUFACTURING	2819.5	3188.4	4137.8	4835.2	4658.1	4387.1
FOOD PRODUCTS	110.3	117.8	134.7	149.3	161.4	177.1
APPAREL	0.1	0.0	0.0	0.0	0.0	0.0
LUMBER AND WOOD PRODUCTS	716.8	792.6	908.4	953.9	1172.7	1266.2
PAPER PRODUCTS	349.6	363.9	396.3	415.9	420.2	407.9
PRINTING AND PUBLISHING	0.0	0.0	0.0	0.0	0.0	0.0
CHEMICAL PRODUCTS	13.2	15.0	16.2	17.7	18.6	19.5
PETROLEUM PRODUCTS	5.8	6.2	18.2	34.0	47.9	67.1
STONE, CLAY, AND GLASS PRODUCTS	2.2	2.7	3.1	3.4	3.4	3.2
PRIMARY METALS	263.8	238.0	257.8	286.6	257.9	261.4
FABRICATED METALS	10.7	10.7	12.3	14.8	15.7	16.3
NONELECTRICAL MACHINERY	43.4	49.2	52.1	62.8	57.9	56.7
ELECTRICAL MACHINERY	7.2	10.1	12.1	13.4	14.3	19.0
AEROSPACE	1262.4	1549.3	2291.1	2840.8	2447.1	2052.9
SHIPBUILDING	7.6	8.2	9.7	10.8	9.6	8.5
OTHER TRANSPORTATION EQUIPMENT	19.0	14.5	12.9	15.4	12.6	10.5
OTHER MANUFACTURING	7.4	10.0	12.8	16.4	18.7	20.8
OTHER GOODS (SCRAP)	218.5	232.9	249.1	260.1	260.1	262.1
NONMANUFACTURING*	202.8	230.6	291.4	334.7	321.7	307.7
TRANSPORTATION SERVICES	90.0	101.0	125.7	143.3	139.5	133.9
WHOLESALE TRADE	112.9	129.7	165.7	191.4	182.2	173.8
SERVICES	584.0	621.0	662.7	704.3	738.7	757.3
TRANSPORTATION SERVICES	79.6	84.9	89.7	95.9	107.0	104.9
WHOLESALE TRADE	25.8	25.9	27.9	29.4	32.7	32.6
TRAVEL	184.4	196.6	204.4	225.2	235.2	240.5
TRANSPORTATION SERVICES	17.3	18.5	19.2	21.2	22.1	22.6
EATING AND DRINKING PLACES	34.1	36.4	37.8	41.7	43.6	44.5
HOTELS AND LODGING	39.0	41.6	43.2	47.6	49.7	50.9
OTHER SERVICES	23.9	25.5	26.5	29.2	30.5	31.2
OTHER	70.0	74.7	77.6	85.5	89.3	91.4
COMPUTER SOFTWARE	NA	NA	NA	NA	NA	NA
OTHER SERVICES	294.2	313.6	340.7	353.9	363.8	379.3
FINANCE, INSURANCE, AND REAL ESTATE	23.2	24.7	26.0	28.8	29.9	33.9
BUSINESS AND PROFESSIONAL SERVICES	8.6	9.2	9.7	10.7	11.2	12.6
MISCELLAENOUS SERVICES	3.8	4.0	4.3	4.7	4.9	5.6
OTHER (ROYALTIES, FEDERAL RECEIPTS)	258.6	275.7	300.8	309.6	317.9	327.2

*TRANSPORTATION AND TRADE ASSOCIATED WITH DISTRIBUTION OF WASHINGTON PRODUCED GOODS.

TABLE B-1. WASHINGTON STATE FOREIGN EXPORTS (MILLIONS OF 1995 DOLLARS)

	1972	1973	1974	1975	1976	1977
FOREIGN EXPORTS	7025.4	7905.4	8316.8	8462.3	8616.9	8805.8
GOODS	6282.2	7024.3	7269.5	7301.0	7319.6	7428.3
RESOURCES	572.4	625.1	637.7	639.6	601.9	591.0
AGRICULTURE	567.4	619.6	631.6	633.6	594.4	582.8
FORESTRY AND FISHING	1.9	1.9	1.5	1.2	1.1	0.9
MINING	3.1	3.6	4.6	4.8	6.4	7.4
MANUFACTURING	5083.4	5715.0	5927.4	5943.0	5981.7	6081.0
FOOD PRODUCTS	191.8	196.6	206.0	228.8	291.9	343.5
APPAREL	0.0	0.7	1.4	2.2	3.4	4.1
LUMBER AND WOOD PRODUCTS	1470.7	1354.0	1325.0	1389.0	1428.6	1375.0
PAPER PRODUCTS	441.8	490.6	498.2	510.9	648.0	530.9
PRINTING AND PUBLISHING	0.0	0.9	1.8	2.7	3.8	5.1
CHEMICAL PRODUCTS	21.9	24.7	26.2	28.7	35.5	45.8
PETROLEUM PRODUCTS	92.4	89.6	78.0	74.2	70.0	68.5
STONE, CLAY, AND GLASS PRODUCTS	3.4	6.0	8.4	11.0	14.7	19.2
PRIMARY METALS	285.6	293.9	255.0	213.3	201.5	185.3
FABRICATED METALS	18.9	21.5	21.9	30.0	30.2	28.6
NONELECTRICAL MACHINERY	67.3	91.8	103.0	105.9	115.0	129.6
ELECTRICAL MACHINERY	24.8	30.6	34.6	30.0	32.7	41.2
AEROSPACE	2420.4	3041.8	3273.3	3200.6	2949.0	3098.0
SHIPBUILDING	9.5	9.5	11.1	11.3	12.1	13.9
OTHER TRANSPORTATION EQUIPMENT	9.1	13.1	14.9	15.4	19.3	25.7
OTHER MANUFACTURING	25.9	49.7	68.5	89.0	126.0	166.8
OTHER GOODS (SCRAP)	273.9	293.9	302.3	313.3	331.8	346.1
NONMANUFACTURING	352.5	390.3	402.1	405.0	404.1	410.2
TRANSPORTATION SERVICES	152.9	171.1	177.1	177.8	178.4	181.0
WHOLESALE TRADE	199.5	219.2	225.0	227.2	225.8	229.2
SERVICES	743.2	881.1	1047.3	1161.4	1297.3	1377.4
TRANSPORTATION SERVICES	114.5	142.2	151.2	149.4	163.6	170.1
WHOLESALE TRADE	36.1	44.4	48.0	46.9	49.1	49.7
TRAVEL	254.6	295.3	331.1	372.0	426.0	430.6
TRANSPORTATION SERVICES	23.9	27.8	31.1	35.0	40.0	40.5
EATING AND DRINKING PLACES	47.1	54.7	61.3	68.9	78.9	79.8
HOTELS AND LODGING	53.8	62.4	70.0	78.6	90.1	91.0
OTHER SERVICES	33.0	38.2	42.9	48.2	55.2	55.8
OTHER	96.7	112.2	125.8	141.3	161.8	163.6
COMPUTER SOFTWARE	NA	NA	NA	NA	NA	NA
OTHER SERVICES	338.0	399.2	517.0	593.0	658.6	726.9
FINANCE, INSURANCE, AND REAL ESTATE	37.0	41.0	68.7	82.6	96.4	99.8
BUSINESS AND PROFESSIONAL SERVICES	13.8	15.3	25.6	30.8	36.0	37.2
MISCELLAENOUS SERVICES	6.1	6.7	11.2	13.5	15.8	16.3
OTHER (ROYALTIES, FEDERAL RECEIPTS)	281.2	336.2	411.5	466.1	510.5	573.6

*TRANSPORTATION AND TRADE ASSOCIATED WITH DISTRIBUTION OF WASHINGTON PRODUCED GOODS.

TABLE B-1. WASHINGTON STATE FOREIGN EXPORTS (MILLIONS OF 1995 DOLLARS)

	1978	1979	1980	1981	1982	1983
FOREIGN EXPORTS	10217.4	11638.9	12838.2	13318.4	12765.9	12384.2
GOODS	8691.4	10047.9	11097.2	11397.3	10876.9	10542.8
RESOURCES	602.3	621.7	643.5	699.8	640.0	671.0
AGRICULTURE	594.3	612.3	631.7	688.1	630.2	660.7
FORESTRY AND FISHING	0.7	0.6	0.3	0.1	0.0	2.0
MINING	7.3	8.8	11.5	11.6	9.7	8.2
MANUFACTURING	7228.6	8465.6	9426.6	9641.6	9210.1	8857.8
FOOD PRODUCTS	374.6	397.1	413.1	454.7	497.9	513.2
APPAREL	5.1	5.8	5.9	6.0	6.8	7.8
LUMBER AND WOOD PRODUCTS	1396.3	1424.8	1429.7	1464.1	1422.9	1562.3
PAPER PRODUCTS	505.2	620.1	690.4	723.4	759.3	820.5
PRINTING AND PUBLISHING	6.6	8.4	9.9	11.6	13.2	15.6
CHEMICAL PRODUCTS	56.9	64.6	65.5	75.8	89.7	112.8
PETROLEUM PRODUCTS	78.6	84.7	89.8	98.7	99.1	93.9
STONE, CLAY, AND GLASS PRODUCTS	22.8	26.1	25.7	26.6	26.1	27.1
PRIMARY METALS	260.2	312.6	349.4	396.9	387.8	409.5
FABRICATED METALS	31.5	32.7	34.3	35.2	29.4	39.7
NONELECTRICAL MACHINERY	148.6	177.4	188.4	201.1	232.4	225.2
ELECTRICAL MACHINERY	50.4	65.7	79.5	84.8	92.7	108.7
AEROSPACE	4022.4	4896.5	5654.9	5620.2	5043.6	4359.5
SHIPBUILDING	18.3	21.7	20.9	23.1	23.5	26.4
OTHER TRANSPORTATION EQUIPMENT	30.9	34.7	37.7	33.0	31.8	30.3
OTHER MANUFACTURING	220.1	292.8	331.4	386.4	453.8	505.1
OTHER GOODS (SCRAP)	377.7	400.7	409.5	419.2	416.3	422.3
NONMANUFACTURING	482.7	560.0	617.6	636.7	610.5	591.7
TRANSPORTATION SERVICES	211.7	244.7	270.3	277.5	264.8	256.6
WHOLESALE TRADE	271.0	315.3	347.3	359.2	345.7	335.0
SERVICES	1526.1	1591.0	1740.9	1921.1	1889.0	1841.4
TRANSPORTATION SERVICES	192.3	236.5	245.8	253.3	242.4	249.5
WHOLESALE TRADE	55.3	61.8	69.2	68.4	62.3	60.4
TRAVEL	477.8	525.8	596.9	656.6	579.0	489.5
TRANSPORTATION SERVICES	44.9	49.4	56.1	61.7	54.4	46.0
EATING AND DRINKING PLACES	88.5	97.4	110.6	121.6	107.2	90.7
HOTELS AND LODGING	101.0	111.2	126.2	138.8	122.4	103.5
OTHER SERVICES	61.9	68.1	77.3	85.0	75.0	63.4
OTHER	181.5	199.7	226.8	249.4	220.0	186.0
COMPUTER SOFTWARE	NA	NA	NA	NA	NA	NA
OTHER SERVICES	800.7	766.9	829.0	942.8	1005.3	1042.0
FINANCE, INSURANCE, AND REAL ESTATE	122.9	140.9	152.7	219.0	260.8	257.0
BUSINESS AND PROFESSIONAL SERVICES	45.8	52.5	57.0	81.7	97.3	95.9
MISCELLAENOUS SERVICES	20.1	23.1	25.0	35.9	42.7	42.1
OTHER (ROYALTIES, FEDERAL RECEIPTS)	611.9	550.4	594.3	606.2	604.5	647.1

*TRANSPORTATION AND TRADE ASSOCIATED WITH DISTRIBUTION OF WASHINGTON PRODUCED GOODS.

TABLE B-1. WASHINGTON STATE FOREIGN EXPORTS (MILLIONS OF 1995 DOLLARS)

	1984	1985	1986	1987	1988	1989
FOREIGN EXPORTS	13698.6	15273.4	18055.5	19855.6	22450.0	27411.6
GOODS	11665.4	13164.5	15603.2	17044.1	19245.9	23675.0
RESOURCES	709.2	731.2	780.7	732.0	806.2	852.8
AGRICULTURE	695.7	714.0	762.9	709.2	781.6	828.5
FORESTRY AND FISHING	3.9	6.0	8.9	11.9	11.7	11.4
MINING	9.6	11.2	8.9	10.8	12.9	12.9
MANUFACTURING	9862.9	11238.2	13462.0	14859.5	16846.4	21268.3
FOOD PRODUCTS	522.0	579.2	609.0	656.5	770.7	884.2
APPAREL	9.0	9.2	9.6	10.9	9.5	10.2
LUMBER AND WOOD PRODUCTS	1665.1	1707.2	1862.5	2031.0	2475.8	2648.1
PAPER PRODUCTS	850.6	909.1	947.3	937.7	826.8	938.5
PRINTING AND PUBLISHING	18.2	21.2	25.2	28.8	33.4	37.7
CHEMICAL PRODUCTS	131.2	157.4	182.6	193.2	222.6	238.8
PETROLEUM PRODUCTS	113.9	121.3	145.7	157.5	203.0	263.5
STONE, CLAY, AND GLASS PRODUCTS	28.3	27.9	28.7	31.1	33.2	44.7
PRIMARY METALS	472.6	485.3	581.5	619.7	618.8	639.4
FABRICATED METALS	53.2	64.3	80.9	99.9	115.9	121.2
NONELECTRICAL MACHINERY	254.3	301.6	340.1	336.6	416.5	521.0
ELECTRICAL MACHINERY	119.5	141.6	174.6	201.1	180.8	200.3
AEROSPACE	4990.6	6048.1	7769.4	8812.1	10015.5	13694.8
SHIPBUILDING	30.9	27.8	29.3	28.8	38.1	39.7
OTHER TRANSPORTATION EQUIPMENT	39.9	44.1	46.5	54.6	75.1	90.7
OTHER MANUFACTURING	563.7	592.8	629.1	660.0	810.9	895.5
OTHER GOODS (SCRAP)	437.0	448.9	467.6	478.4	497.6	310.7
NONMANUFACTURING	656.2	746.2	893.0	974.2	1095.7	1243.2
TRANSPORTATION SERVICES	283.9	320.3	379.4	414.4	468.1	530.1
WHOLESALE TRADE	372.3	426.0	513.6	559.8	627.6	713.1
SERVICES	2033.2	2108.9	2452.2	2811.5	3204.1	3736.7
TRANSPORTATION SERVICES	284.9	299.9	334.8	382.3	452.2	503.7
WHOLESALE TRADE	65.2	67.6	71.0	78.9	93.7	105.5
TRAVEL	707.2	693.4	783.2	867.7	1039.4	1268.5
TRANSPORTATION SERVICES	66.5	65.2	73.6	81.6	97.7	119.2
EATING AND DRINKING PLACES	131.0	128.4	145.0	160.7	192.5	234.9
HOTELS AND LODGING	149.5	146.6	165.6	183.4	219.7	268.2
OTHER SERVICES	91.6	89.8	101.4	112.4	134.6	164.3
OTHER	268.6	263.4	297.5	329.6	394.9	481.9
COMPUTER SOFTWARE	NA	82.2	144.0	257.5	381.0	530.5
OTHER SERVICES	975.9	965.8	1119.2	1225.1	1237.8	1328.5
FINANCE, INSURANCE, AND REAL ESTATE	253.1	250.2	338.4	338.0	351.5	411.9
BUSINESS AND PROFESSIONAL SERVICES	94.4	93.3	126.2	126.1	131.1	153.6
MISCELLAENOUS SERVICES	41.5	41.0	55.4	55.4	57.6	67.5
OTHER (ROYALTIES, FEDERAL RECEIPTS)	587.0	581.4	599.2	705.6	697.7	695.4

*TRANSPORTATION AND TRADE ASSOCIATED WITH DISTRIBUTION OF WASHINGTON PRODUCED GOODS.

TABLE B-1. WASHINGTON STATE FOREIGN EXPORTS (MILLIONS OF 1995 DOLLARS)

	1990	1991	1992	1993	1994	1995
FOREIGN EXPORTS	32683.7	34002.0	34715.4	34114.9	30920.0	28160.9
GOODS	28248.7	28994.0	29035.8	28005.7	24382.0	21036.1
RESOURCES	945.9	966.3	948.6	1059.2	1049.1	1060.1
AGRICULTURE	923.0	944.0	927.6	1039.8	1028.9	1040.0
FORESTRY AND FISHING	9.7	8.5	8.4	7.5	7.1	7.0
MINING	13.2	13.8	12.7	11.9	13.1	13.2
MANUFACTURING	25656.2	26502.3	26515.5	25313.0	21834.0	18379.2
FOOD PRODUCTS	746.2	846.3	917.1	918.5	910.8	1265.6
APPAREL	12.9	23.6	41.6	51.9	50.5	49.0
LUMBER AND WOOD PRODUCTS	2410.9	2107.4	1987.5	2031.0	1799.3	1896.5
PAPER PRODUCTS	896.9	971.9	1027.5	949.0	1042.8	1230.0
PRINTING AND PUBLISHING	41.6	45.8	49.8	55.6	60.2	64.5
CHEMICAL PRODUCTS	299.0	127.4	154.2	176.5	205.9	219.1
PETROLEUM PRODUCTS	219.6	229.4	306.4	286.4	253.0	310.9
STONE, CLAY, AND GLASS PRODUCTS	43.9	43.5	49.6	38.1	34.4	36.1
PRIMARY METALS	701.3	706.6	684.7	669.3	664.8	703.6
FABRICATED METALS	121.6	136.8	194.0	132.4	165.9	158.3
NONELECTRICAL MACHINERY	487.3	496.2	658.2	870.2	768.7	989.6
ELECTRICAL MACHINERY	234.3	287.7	330.3	395.2	475.6	597.4
AEROSPACE	18350.3	19388.1	18909.5	17489.5	14095.2	9490.0
SHIPBUILDING	55.9	50.1	51.6	48.0	54.8	60.1
OTHER TRANSPORTATION EQUIPMENT	101.9	110.8	136.6	167.0	193.4	219.5
OTHER MANUFACTURING	932.6	930.6	1017.0	1034.5	1058.6	1088.8
OTHER GOODS (SCRAP)	354.8	256.9	265.6	307.1	275.0	330.1
NONMANUFACTURING	1291.9	1268.5	1306.1	1326.4	1223.9	1266.8
TRANSPORTATION SERVICES	555.5	544.9	550.4	552.1	515.6	526.2
WHOLESALE TRADE	736.3	723.6	755.7	774.3	708.3	740.6
SERVICES	4435.0	5008.0	5679.6	6109.2	6538.0	7124.8
TRANSPORTATION SERVICES	624.9	619.0	640.5	635.7	660.2	687.3
WHOLESALE TRADE	114.2	122.2	130.8	135.4	149.1	165.0
TRAVEL	1470.9	1579.3	1752.3	1825.7	1810.4	1843.8
TRANSPORTATION SERVICES	138.3	148.5	164.7	171.6	170.2	173.3
EATING AND DRINKING PLACES	272.4	292.5	324.5	338.1	335.3	341.5
HOTELS AND LODGING	311.0	333.9	370.4	386.0	382.7	389.8
OTHER SERVICES	190.5	204.5	226.9	236.4	234.4	238.8
OTHER	558.8	600.0	665.7	693.6	687.8	700.5
COMPUTER SOFTWARE	762.1	1083.2	1442.5	1756.1	2072.9	2489.9
OTHER SERVICES	1462.8	1604.3	1713.4	1756.2	1845.5	1938.8
FINANCE, INSURANCE, AND REAL ESTATE	447.6	526.9	572.1	589.9	639.8	652.9
BUSINESS AND PROFESSIONAL SERVICES	166.9	196.5	213.4	220.0	238.6	243.5
MISCELLAENOUS SERVICES	73.3	86.3	93.7	96.6	104.8	107.0
OTHER (ROYALTIES, FEDERAL RECEIPTS)	774.9	794.5	834.3	849.7	862.3	935.4

*TRANSPORTATION AND TRADE ASSOCIATED WITH DISTRIBUTION OF WASHINGTON PRODUCED GOODS.