

THE MICROSOFT ECONOMIC IMPACT STUDY

Prepared for

Microsoft Corporation

By

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EXECUTIVE SUMMARY

Following is an update of the Microsoft Economic Impact Study that was conducted by Dick Conway & Associates and the University of Washington Economic Policy Research Center in 2006. The study documents Microsoft's direct, indirect, and total contribution to the Washington state economy in 2008.

EMPLOYMENT

- *In 2008, Microsoft provided jobs for 39,311 employees in Washington state. This represents an increase of 11,074 employees since 2004.*
- *US Bureau of Labor Statistics data¹ document that Microsoft was directly responsible for one in every 9 jobs created in King County from 2004-2008.*
- *In 2008, Microsoft was the second largest private employer in Washington behind Boeing, which had a workforce of 76,417.²*

COMPENSATION

- *Microsoft employees received \$3.96 billion in wage compensation, \$5.98 billion in gross wage compensation (includes wages, salaries, and non-wage benefits, but excludes stock compensation), and over \$7.00 billion in total compensation (gross wage compensation plus stock compensation) in 2008. For comparison purposes, the wage compensation of the entire aerospace sector in Washington state was \$5.4 billion in 2008.³*
- *Per employee, Microsoft wage compensation was \$100,608, gross wage compensation was \$152,212, and total compensation was \$178,159. By comparison, the US Bureau of Labor Statistics reports the average aerospace worker's wage compensation in Washington State was \$87,113 in 2008.⁴*

IN-STATE PURCHASES

- *To support operations, Microsoft's Washington establishments purchased \$2.15 billion in goods and services from Washington producers. (Table 2)*
- *In-state purchases amounted to \$54,776 per Microsoft employee, which was well above average for businesses in Washington state.*

¹ <http://data.bls.gov:8080/PDQ/outside.jsp?survey=en>

² http://www.boeing.com/employment/employment_table_2008.html. Official Boeing statistics include "contingent" labor while Microsoft figures in this study refer only to actual, not contract employment.

³ <http://www.washington-aerospace.com/pdf/Fact-sheet.pdf>, created 4/2009, accessed 1/28/2010.

⁴ <http://data.bls.gov:8080/PDQ/outside.jsp?survey=en>

ECONOMIC IMPACT

- *Given the \$7.00 billion in total compensation and the \$2.15 billion in operating expenditures on locally produced goods and services, Microsoft injected a total of \$9.16 billion into the Washington economy (Tables 1, 2). These expenditures in turn created job opportunities in other state businesses through the so-called multiplier effect.*
- *Excluding stock compensation and capital expenditures, Microsoft accounted for an estimated \$43.84 billion of Washington Gross State Product. This constituted 13.6 percent of Washington state's Gross State Product in 2008. (Table 3)*
- *Microsoft generated a total of \$18.95 billion in personal income in Washington state, which was 6.8 percent of the state's personal income in 2008. (Table 3)*
- *The total economic impact of Microsoft amounted to 267,611 jobs or 8.4 percent of total Washington state employment in 2008. (Table 3)*
- *From 1990 to 2008, Washington employment grew at an average annual rate of 1.7% percent, while Microsoft employment expanded at a rate of 13.5 percent (Table 5, Figure 4). Due to its rapid growth, Microsoft experienced a 10 fold increase in its impact on Washington state employment over time. In 1990, its impact was 25,270 jobs, which grew to 194,620 jobs in 2004, and ultimately to 267,611 jobs in 2008.*
- *Since 1990, Microsoft has been the single largest contributor to economic growth in Washington; its impact on the state accounted for 28.5 percent of the total gain in state employment. (Table 5)*
- *Microsoft's employment multiplier was 6.81 ($=267,611/39,311$) in 2008, implying that every job at Microsoft supported 5.81 jobs elsewhere in the Washington state economy. Most of these jobs were well paying jobs in service sectors. (Table 3)*
- *The Microsoft employment multiplier has been increasing substantially over time to match the growth of the company. In 1996, the multiplier was 4.4, from which it grew to 5.1 in 2004, to reach 6.8 in 2008. The Microsoft employment multiplier is high compared to those produced by other companies or industries. Typically, employment multipliers range from 2 to 4.*
- *For comparison purposes we can contrast the Microsoft employment multiplier with Boeing's. The Boeing employment multiplier has been estimated to be 4 by the Washington Research Council in 2009⁵. In addition, the Boeing multiplier has remained largely stagnant for the past 20 years.⁶ This is due to the maturity of Boeing as a company, while Microsoft's sales, purchases, and employment in Washington state have been growing rapidly.*

⁵ Washington Alliance for a Competitive Economy "What if Boeing left Washington" Policy Brief 09-04.

⁶ In 1989, the Boeing job multiplier was 3.8, see Pascall, G., D. H. Pedersen, R. S. Conway, Jr. "The Boeing Company Economic Impact Study," The Boeing Company, 1989.

SUMMARY COMMENTS

There has been a distinct increase in the direct impact of Microsoft on the Washington economy since 2004. This increase is due to two important factors. First, the company's total compensation paid to its Washington state employees increased sharply. Second, Microsoft's total purchases of Washington state goods and services nearly doubled since 2004. From 2004 to 2008, Microsoft added an additional 11,074 jobs at its Washington state establishments, generated an additional \$1.29 billion in gross wage compensation, and increased its purchases of locally produced goods and services by \$921.7 million.

Just about 40,000 employees work at Microsoft's Washington state establishments; the gross wage compensation per worker is about \$152,000 (or \$178,000 when stock compensation is also considered). Employment and total compensation combine with over \$2 billion in local purchases to generate a powerful multiplier effect that generates Microsoft's total impact on the Washington state economy. This total impact represents the creation of 267,611 jobs in the state and \$43.8 billion in gross state product.

While these findings are impressive, they cannot provide a comprehensive picture of the importance of Microsoft for the Washington state economy. Impact studies do not include, for example, the positive effects of the philanthropic impact that Microsoft (and Microsoft employees') generate in the state. Nor can impact studies account for knowledge spillovers produced by the vast number of highly skilled workers that have been attracted to the state either directly or indirectly by Microsoft. As the "anchor tenant" of Washington state's information technology cluster, Microsoft also provides substantial knowledge and productivity spillovers to other firms, startups, and venture capitalists.

Like a magnet, Microsoft has drawn a large number of software companies to the area that now comprise the most vibrant software industry cluster in the nation. A 2009 study by the Milken Institute ranks US areas by their "technology capacity." The study documents the extraordinary dominance of the Seattle Software Cluster noting that...

"...perhaps the most compelling example of its prowess in software can be found in the observation that Seattle captures 23.4 percent of wages in this field in all of North America. The strength of industry titan Microsoft and its affiliated companies gives the Seattle metro area a decisive lead in this category."⁷

⁷ Source: DeVol, R. C., K. Klowden, A. Bedroussian, and B. Yeo, (2009). "North America's High-Tech Economy. *The Geography of Knowledge-Based Industries*" Milken Institute.

THE MICROSOFT ECONOMIC IMPACT STUDY

1. INTRODUCTION

For two hundred years, big businesses have played a central role in the Washington economy. At the turn of the nineteenth century, the Hudson's Bay Company, the first large-scale corporate enterprise in North America, established a fur-trading post in Fort Vancouver and helped open up the Pacific Northwest to Euro-American settlement. The Weyerhaeuser Company, which once owned one-fourth of the state's timberland, then led Washington to become the nation's number one producer of lumber in the early 1900s. The Boeing Company, despite its ups and downs, has been the world's leading manufacturer of commercial aircraft and the largest private employer in the state since the beginning of the jet age fifty years ago.

When Microsoft moved to Washington in 1979, it was a \$3 million company employing 30 people. After two decades of extraordinary growth, Microsoft emerged as the world's top producer of software for personal computers. By 2008, with offices in 108 countries, the software giant had sales of \$60 billion and 91,000 employees worldwide. Today, about one-half of Microsoft's operations are located on the campus of its Redmond headquarters.

Microsoft's impact on the local economy is substantial. Like Boeing and Weyerhaeuser, Microsoft not only employs thousands of people but also supports many more local jobs in other industries through its indirect impact on business activity in the state (the so-called *multiplier effect*).

The objective of this impact study is to measure Microsoft's economic impact on Washington. The study covers the following topics:

1. The history of Microsoft.
2. The current operations (production, employment, income) of the company.
3. The impact of Microsoft on the Washington state economy.
4. The company's contribution to Washington state's economic growth.

The study draws upon the analytical capabilities of the *Washington Projection and Simulation Model* (Bourque, Conway, and Howard, 1977; and Conway, 1990) and the *Washington State Input-Output Model* provided by the Washington state *Office of Financial Management*. The Washington Projection and Simulation Model was developed at the University of Washington; it is an inter-industry 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 (such as computer software) on the rest of the economy.

The Washington State Input-Output Model is maintained by the Washington state *Office of Financial Management*. It utilizes updated input-output coefficients provided by the 2008 release. The update involved seven state agencies and legislative staff under the direction of Dr. William Beyers, University of Washington, and Dr. Irv Lefberg, Assistant Director of the Forecasting Division Office of the Washington State Office of

Financial Management.

The study begins in Section 2 with a brief history of the company. The discussion highlights Microsoft's product development, its growth over the past 30 years, and its current operations. Section 3 is the centerpiece of the study. It presents estimates of the company's impact on the Washington economy. Several sources of Microsoft's impact are analyzed, including employment, labor compensation, and purchases from Washington state suppliers. Section 4 concludes with summary comments.

2. MICROSOFT CORPORATION

History

Microsoft was founded as a partnership in Albuquerque, New Mexico, by William H. Gates and Paul G. Allen in 1975. The company had one product, three employees, and less than \$25,000 in sales during its first full year of operation. Gates and Allen had moved to Albuquerque to be next to MITS Computer, which had developed the Altair microcomputer kit. Their first product was Microsoft BASIC, a programming language for the Altair. Microsoft BASIC was an adaptation of BASIC, a main-frame computer language, which Gates and Allen had learned in high school in Seattle, Washington.

In the following years, Microsoft not only improved BASIC, but adapted other programming languages for the microcomputer. It released a version of FORTRAN, a scientific language, in 1977 and a version of COBOL, a business language, in 1978. By 1979, when the company moved to Washington, it had more than \$3 million in annual revenues and employed 30 people.

The following year marked a major milestone for the company. In 1980, Microsoft signed a contract with IBM to help develop the personal computer. IBM asked Microsoft to develop versions of BASIC, FORTRAN, COBOL, and Pascal (another programming language) for the IBM personal computer. Later in the year, Microsoft signed another contract with IBM to provide the operating system for the personal computer.

The operating system is the heart of the computer. It has also been the key to Microsoft's success. Microsoft released DOS 1.0 for the IBM personal computer in 1981. When companies such as Compaq developed IBM-compatible computers, it opened up a multi-billion dollar market for Microsoft's disk operating system (renamed MS-DOS) and other personal computer software. Recognizing its vast market potential, Microsoft incorporated in 1981 and established a national sales network.

The personal computer industry and Microsoft have grown at astonishing rates since 1981, when the introduction of the IBM personal computer revolutionized the computer industry. Industry revenue has climbed at a 25 percent annual rate, while Microsoft sales have soared at a 35 percent rate (Figure 1). In 2008, with revenue of \$60 billion, Microsoft was the world's largest producer of software for the personal computer.

Over the years, the company has introduced not only a series of operating systems (e.g., MS-DOS in 1981, Windows 3.0 in 1990, Windows XP in 2001, Windows Vista in 2005, Windows 7 in 2009, Pocket PC in 2000, and Windows Mobile in 2003), but also

Figure 1
MICROSOFT GLOBAL REVENUES

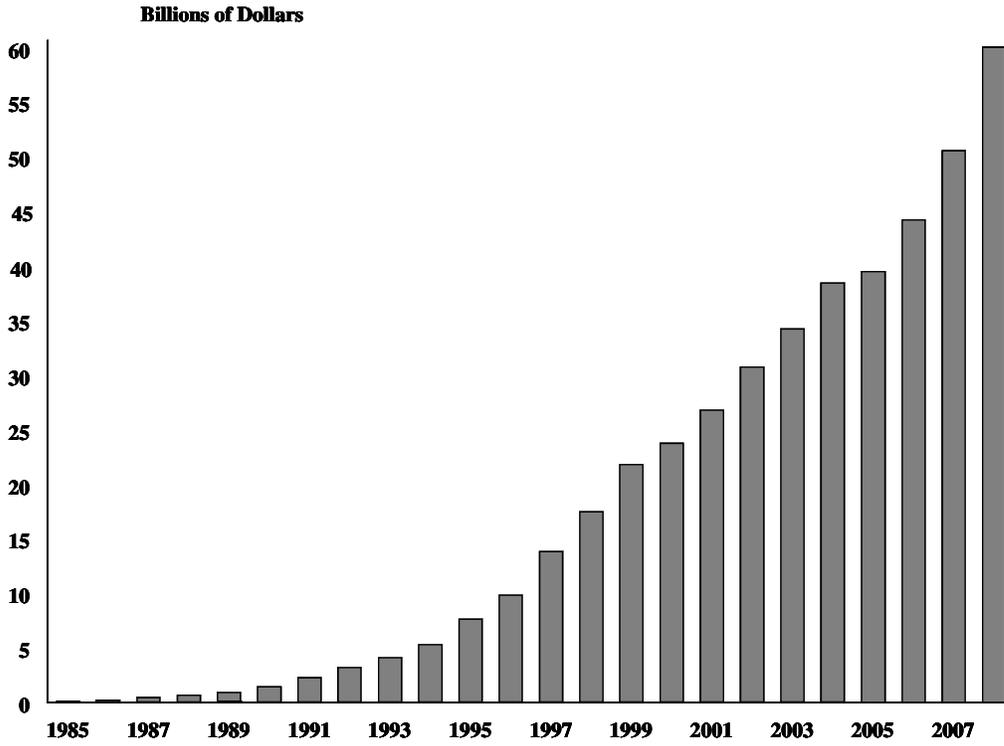
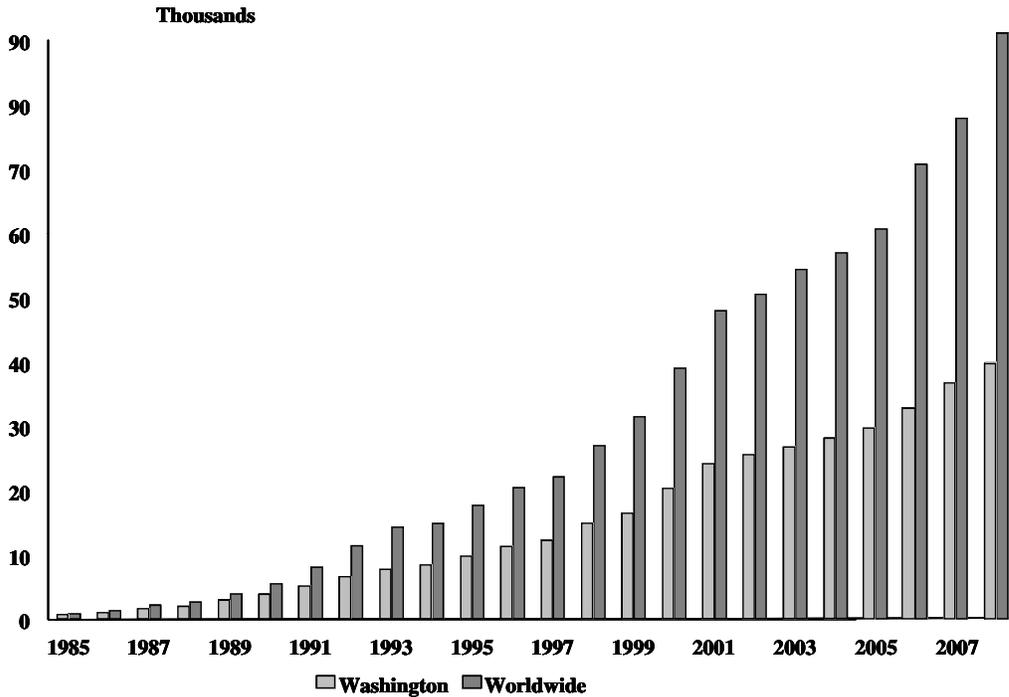


Figure 2
MICROSOFT EMPLOYMENT



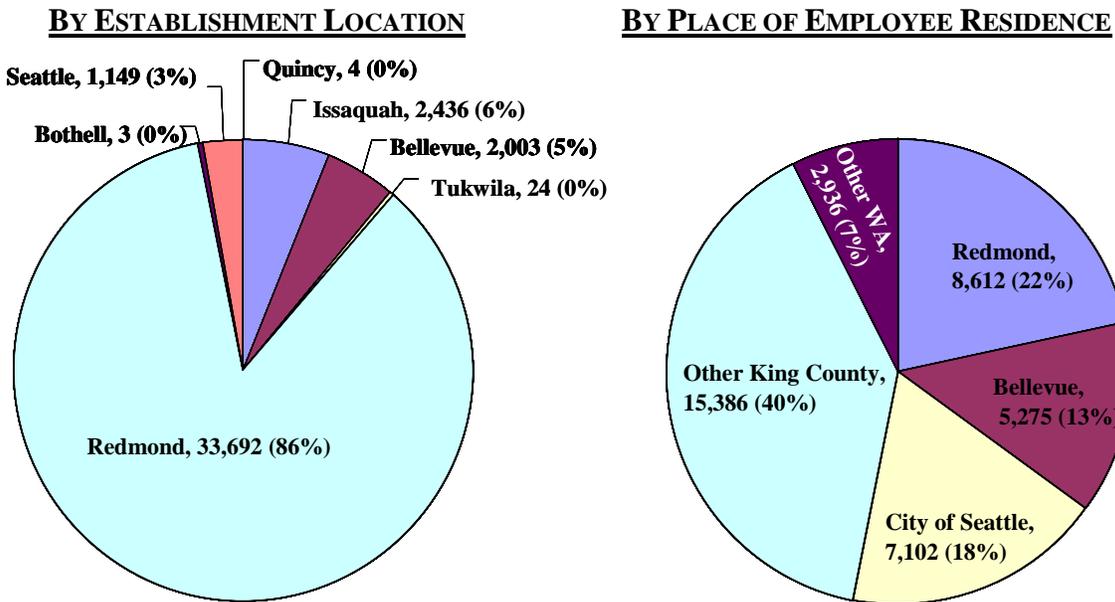
Source: Microsoft.

numerous software applications. Microsoft’s most successful application has been Office, which is an integrated suite of programs for personal and business use. The baseline version of Office, initially released in 1990, combines Word (a word processor), Excel (a spreadsheet), PowerPoint (a graphical presentation program), Access (a relational database program), and Publisher (a desktop publishing program).

Microsoft released Windows NT Advanced Server in 1993 and began to diversify its business to include server operating systems, and database software. As an application server, Windows NT Advanced Server also became a powerful platform for database servers such as Microsoft SQL Server, communications servers such as Microsoft SNA Server, and mail servers such as Microsoft Mail. In addition, the company started a number of important initiatives to leverage the internet, and capture the home entertainment, business enterprise software, and hand-held device markets. In 1995, Microsoft released Internet Explorer 1.0 and developed an internet strategy that added internet capabilities to all its products. In 2008, Microsoft’s core product lines included Client, Server Tools, On Line Business Services, MS Business Division, and the Entertainment and Devices Division.

As Microsoft expanded globally, it devoted an increasing proportion of its personnel to marketing and service, resulting in a geographic shift of its workforce away from Washington (Figure 2). In 1985, 83 percent of the company’s employees worked in the state versus about 44 percent in 2008. Nevertheless, Microsoft’s employment growth in Washington continues to be substantial, and the company has emerged as the state’s second largest employer. Microsoft maintains one major campus in Redmond, which employs about 34,000 people. Other major Microsoft establishments in the state are in Bellevue, Issaquah, and Seattle with 2,003, 2,436, and 1,149 employees, respectively (Figure 3).

Figure 3
MICROSOFT WASHINGTON EMPLOYMENT



Source: Microsoft.

Current Operations

Headquartered in Redmond, WA, Microsoft currently has offices in 108 countries. In 2008, the global revenues of the company exceeded \$60 billion, and about 44 percent of its global labor force was located in Washington state (39,311 of 91,563). Microsoft employees received \$3.96 billion in wage compensation, \$5.98 billion in gross wage compensation (which includes wages, salaries, and non-wage benefits, but excludes stock compensation), and over \$7.00 billion in total compensation (gross wage compensation plus stock compensation). For comparison purposes, the wage compensation of the entire aerospace sector in Washington state was \$5.4 billion in 2008.⁸

Per Microsoft employee, average wage compensation was \$100,608, gross wage compensation amounted to \$152,212, and total compensation was \$178,159. By comparison, the US Bureau of Labor Statistics reports the average aerospace worker's wage compensation in Washington State was \$87,113 in 2008.⁹

Table 1 MICROSOFT REVENUES, EMPLOYMENT, AND COMPENSATION, 2008	
Global Revenues (mils. \$)	\$60,420
Employment	91,563
In Washington establishments	39,311
In other establishments	52,252
Gross Wage Compensation* (mils. \$)	\$5,984
Gross wage compensation per employee	\$152,212

*Washington only; includes wages, salaries, and non-wage benefits, but excludes stock compensation. Source: Microsoft.

Section Summary: Employment & Compensation

- *Microsoft employees received \$5.98 billion in gross wage compensation (wages, salaries, and non-wage benefits), which was an increase of \$1.29 billion from 2004. In addition, Microsoft employees received \$1.02 billion in stock compensation.*
- *Gross wage compensation per Microsoft employee was \$152,212 in 2008. This is more than three times the state per capita income of \$42,356. Including stock compensation, the average Microsoft employee's total compensation was \$178,159.*

⁸ <http://www.washington-aerospace.com/pdf/Fact-sheet.pdf>, created 4/2009, accessed 1/28/2010.

⁹ <http://data.bls.gov:8080/PDQ/outside.jsp?survey=en>

3. WASHINGTON STATE IMPACT

Methodology

As the world's leading producer of software for personal computers, Microsoft plays a critical role in the economies of Washington State and King County. In 2008, Microsoft's job impact in Washington state extended well beyond the company's 39,311 local employees. The company's payroll and the associated operating expenditures created employment opportunities for a multitude of other businesses around the state.

The immediate or *direct impact* of Microsoft is generated by its own production, employment, and labor compensation. As the number of Microsoft employees increases and the total compensation Microsoft pays out rises, one can observe a substantial increase of consumers' purchases in the state. In addition, Microsoft's production structure requires more than just workers. Microsoft operations require local inputs that create additional demand for local goods and services (e.g., paper products, computer repair, financial, legal, and real estate services).

In 2008, Microsoft purchased \$2.15 billion in Washington state commodities. These goods need to be produced, which causes local firms to increase their own output to meet the increased demand. In turn, these local firms then hire additional workers and increase demand for their suppliers' products. As Microsoft's direct impact primes the local supply chain, it creates *multiplier effects*, and the sum of these effects is called the *indirect impact*.

The process by which Microsoft's direct impact creates an indirect impact in Washington state includes more than the company's purchases from other firms. In addition, Microsoft employees themselves generate additional demand for government services and consumer goods. This demand, fueled by the compensation that Microsoft employees receive, sets in motion further rounds of economic activity in the state through additional multiplier effects.

Both the Washington Projection and Simulation Model and the Washington State Input-Output Model provide means to capture the multiplier effects and assess the *total impact* (direct and indirect) of Microsoft on the state economy. The Washington State Input-Output Model provides the newest set of input-output multipliers, which were released in April 2008 and utilized in this study.

The Washington economy itself contains intricate input-output structures, where purchases by one firm (inputs into its production process) represent the output of other firms (upstream in the supply chain). An input-output model is a mathematical description of the interdependencies of all inputs and outputs used by all firms in all sectors. For example, an input-output model of the steel and automobile sectors would include the value of steel produced and sold to regional auto manufacturers, as well as the value of automobiles produced in the region that are sold to the region's steel producers.

The total impact of a firm on the local economy can then be calculated by the painstaking process of accounting for the value of its total output and dividing it into all inputs required. These inputs are then traced back to all of the firms that produced them through a system of inter-industry sales. How much a firm or an industry demands in terms of inputs from other industries depends on the specific industry type, its output, and its

employment levels. One primary use of an input-output model is to estimate the total impact that was created by the demand of a firm or industry. The term “impact analysis” is used to characterize such a study.

The ratio of the total impact on a regional economy relative to the direct impact is called a regional multiplier. Below we measure Microsoft’s impact in terms of the employment multiplier, which indicates how many jobs Microsoft supports in the regional economy for every worker that the company employs directly. The input-output model even provides estimates as to how many jobs are created in specific sectors, and the wages associated with the added employment. A detailed discussion of the methodology is provided in the appendix.

Microsoft’s Direct Economic Impact

The direct impact of Microsoft on Washington state is generated by its employment of local workers, their labor compensation, as well as the expenditures on goods and services in the state. This direct economic impact is detailed in Table 2.

I) Gross wage compensation *	\$5,984
II) Spending on local goods/services	\$2,153
II.1) Goods	\$378
II.1.1) Construction	\$55
II.1.2) Paper, Printing, and Publishing	\$261
II.1.3) Nonelectrical machinery (e.g., office machine parts)	\$6
II.1.4) Electrical machinery (e.g., electronic components)	\$31
II.1.5) Communications (e.g., telephone and internet)	\$5
II.1.6) Utilities (gas, water, and electricity)	\$21
II.2) Services	\$1,775
II.2.1) Finance and insurance services	\$3
II.2.2) Real estate services	\$46
II.2.3) Computer services (e.g., contract programming)	\$1,247
II.2.4) Employment services (e.g., temporary employment)	\$1
II.2.5) Other business and professional services	\$478

*Washington only; includes wages, salaries, and non-wage benefits; excludes stock compensation. Source: Microsoft.

Most of the in-state expenditures were purchases of services, including \$1.8 billion on professional and business services. Expenditures on computer services (contract programming) dominated with over \$1.2 billion, followed by other business services, where Microsoft spent \$478 million. Notable procurements of locally produced goods included \$55 million for construction, \$261 million for printing (e.g., books and other publications), and \$31 million for machinery (e.g., computer parts and repair).

Major Findings: In-State Purchases & Microsoft Direct Impact

- *In 2008, Microsoft purchased \$2.15 billion in goods and services from establishments located in Washington state. (Table 2)*
- *In-state purchases amounted to \$54,776 per Microsoft employee, which is well above average for businesses in Washington. (Tables 1, 2)*
- *The \$5.98 billion in gross wage compensation to employees, in addition to the \$2.15 billion in purchases of local goods and services, resulted in \$8.14 billion that Microsoft pumped directly into the Washington economy. (Tables 1, 2). If stock compensation is considered, this figure increases to \$9.16 billion.*

Microsoft's Total Impact on Washington State

Tables 3 and 4 report Microsoft's *total impact* on the Washington economy, taking into account the multiplier effects described above. The first column in Table 3 shows the performance of the Washington economy in 2008, including Microsoft. The second column is a projection of what the economy would have looked like without Microsoft. The difference between the two columns is the total impact that Microsoft exerted on the Washington economy (Table 3, column 3). The fourth column shows Microsoft's total impact as a percentage of Washington's economic activity.

Table 3 details Microsoft's extensive impact on the Washington state economy. Microsoft directly and indirectly supported about 13.6 percent of Washington state's Gross State Product, 8.4 percent of total employment, and 6.8 percent of total personal income in 2008. Most of the income, \$40 billion, was created in the service producing sector.

On a per employee basis, Microsoft's impact on the Washington economy, based on its labor compensation, is likely to exceed Boeing's. This is because the wage compensation per Microsoft employee is about 15 percent greater than the wage compensation of the average aerospace worker. Aside from pure wage compensation, Microsoft also spent a substantially greater sum per employee on locally produced goods and services than Boeing, because the aircraft company imports most of its production components. In 2008, Microsoft spent approximately \$54,776 per employee on local goods and services (for a total of \$2.15 billion), while Boeing spent \$43,009¹⁰ per employee in the state in 2008.

¹⁰ http://www.boeing.com/aboutus/govt_ops/state_cards/card_WA.pdf.

Major Findings: Microsoft's Total Impact on State Income

- *Gross state product.* Gross State Product (GSP), like its national counterpart Gross Domestic Product (GDP), is the broadest measure of economic activity in the state. In 2008, Washington GSP was estimated to be \$322.8 billion. Microsoft directly and indirectly accounted for \$43.8 billion, or 13.6 percent of Washington state's GSP.
- *Personal income.* Directly and indirectly, Microsoft accounted for \$18.9 billion in personal income, or 6.8 percent of the state total. Without Microsoft, Washington per capita income would have been \$2,876 lower.

Microsoft's impact created not only additional income in the state, but also additional employment. 267,611 workers in the state of Washington depended upon Microsoft through its direct impact of 39,311 jobs, plus an additional 228,300 jobs created by the multiplier effect. This multiplier effect is the result of Microsoft's \$8.14 billion in expenditures in Washington state during 2008. Microsoft's employment impact represented 8.4 percent of the 3.2 million jobs in the state.

The impact on Washington employment due to Microsoft's hiring, labor compensation, and goods purchases is captured by the so-called *employment multiplier*. The Microsoft employment multiplier was 6.81 (= 267,611/39,311) in 2008, implying that for every Microsoft job there were 5.81 supporting jobs created in the local economy. The Microsoft employment multiplier has been increasing steadily over time to reflect the company's rapid growth in the state.

In 1996, the Microsoft employment multiplier was 4.4, and by 2004 it had grown to 5.1. The employment multiplier is also significantly higher than those found for other industries in Washington state. Employment multipliers typically range between 2 and 4. For example, the Boeing multiplier was 3.8 in 1989 and 4.0 in 2008.¹¹ Microsoft's employment multiplier is unusually large because a dollar of labor compensation typically has a greater impact on the economy than a dollar of in-state purchases. The largest share of Microsoft's expenditures in the state was labor compensation.

Major Findings: Microsoft's Total Impact on Employment

- *267,611 workers in the state of Washington depended upon Microsoft through its direct impact of 39,311 jobs, plus the additional 228,300 jobs created by the multiplier effect. Microsoft's employment impact represents 8.4 percent of the 3.2 million jobs in the state.*
- *The Microsoft employment multiplier was 6.81 (= 267,611/39,311), implying that for every Microsoft job there were 5.81 supporting jobs in the economy. Microsoft's employment impact has been increasing steadily to match the company's growth in purchases and employment in the state.*

¹¹ Washington Alliance for a Competitive Economy "What if Boeing left Washington" Policy Brief 09-04. In 1989, the Boeing job multiplier was 3.8, see Pascall, G., D. H. Pedersen, R. S. Conway, Jr. "The Boeing Company Economic Impact Study," The Boeing Company, 1989.

Table 3:
TOTAL IMPACT OF MICROSOFT ON THE WASHINGTON ECONOMY, 2008
(Microsoft's WA Establishments' Expenditures on WA Good/Services & Multiplier Effects)

<u>Washington State Economy</u>				
	With Microsoft	Without Microsoft	Total Impact	% of WA
1.) TOTAL IMPACT ON INCOME				
1.1) Gross state product (mils. \$)	\$322,778	\$278,935	\$43,843	13.6%
1.1.1) Value of goods produced (mils. \$)	\$108,789	\$105,125	\$3,664	3.4%
1.1.2) Value of services produced (mils. \$)	\$213,990	\$173,810	\$40,180	18.8%
1.2) Personal income (mils \$)	\$279,024	\$260,077	\$18,948	6.8%
1.3) Per capita income (\$)	\$42,356	\$39,480	\$2,876	6.8%
2) TOTAL IMPACT ON EMPLOYMENT				
2.1) Total employment	3,200,120	2,932,509	267,611	8.4%
2.2) Non-farm employment	2,928,434	2,660,823	267,611	9.1%
2.3) Unemployment rate (%)	5.3	5.2	-0.1	
3) TOTAL IMPACT ON EMPLOYMENT BY SECTOR				
3.1) All goods producing sectors	540,243	525,839	14,404	2.7%
3.1.1) Resources	86,757	84,347	2,410	2.8%
3.1.2) Construction	176,353	171,543	4,810	2.7%
3.1.3) Manufacturing	277,133	269,949	7,184	2.6%
3.2) All service sectors	2,388,190	2,134,983	253,207	10.6%
3.2.1) Food, accommodation, recreation, arts	270,907	239,052	31,855	11.8%
3.2.2) Wholesale and retail trade	448,961	411,708	37,253	8.3%
3.2.3) Transportation and utilities	89,873	80,982	8,891	9.9%
3.2.4) Information	105,910	44,256	61,654	58.2%
3.2.5) Finance and real estate services	145,629	132,726	12,903	8.9%
3.2.6) Professional and business services	299,943	278,045	21,898	7.3%
3.2.7) Health and other services	464,223	416,322	47,901	10.3%
3.2.8) Education, administration, government	562,744	531,893	30,851	5.5%

Direct Impact is the change in the Washington economy due to Microsoft purchases and employment in the state. Total Impact represents the sum of the direct impact and the multiplier effect. Sources: Microsoft, US Bureau of Labor Statistics, the Washington State Office of Financial Management, the US Bureau of Economic Analysis, the Washington Employment Security Department, and author's calculations.

Table 4 highlights the sources of Microsoft’s total impact. It separates Microsoft’s total impact into its two components: 1) the impact due to Microsoft’s labor employment and compensation, and 2) the impact due to Microsoft’s in-state purchases.

The sources of Microsoft’s impact can be traced back to (a) direct goods/service purchases, (b) labor compensation, and (c) employment (see Table 4). By far the greatest contribution of Microsoft to the Washington economy is through its employment and labor compensation, which supported 231,407 jobs. This number represents 220,953 jobs in services, 33,383 in wholesale and retail trade, and 10,454 in goods producing industries. The impact of Microsoft’s employment and labor compensation accounted for more than four-fifths of the company’s total impact on Washington employment.

Table 4			
SOURCES OF MICROSOFT IMPACT ON THE WASHINGTON ECONOMY, 2008			
	<u>Impact due to Microsoft’s</u>		
	Labor Compensation And Employment	In-State Purchases	Total Impact
1) TOTAL IMPACT ON INCOME			
1.1) Gross domestic product (mils. \$)	\$39,076	\$4,767	\$43,843
2) TOTAL IMPACT ON EMPLOYMENT			
2.1) Employment	231,407	36,204	267,611
3) TOTAL IMPACT ON EMPLOYMENT BY SECTOR			
3.1) All goods producing sectors	10,454	3,951	14,404
3.1.1) Resources	2,149	261	2,410
3.1.2) Construction	4,080	730	4,810
3.1.3) Manufacturing	4,225	2,959	7,184
3.2) All service sectors	220,953	32,254	253,207
3.2.1) Food, accommodation, recreation, arts	28,555	3,300	31,855
3.2.2) Wholesale and retail trade	33,383	3,870	37,253
3.2.3) Transportation and utilities	7,968	923	8,891
3.2.4) Information	47,889	13,765	61,654
3.2.5) Finance and real estate services	11,658	1,245	12,903
3.2.6) Professional and business services	19,746	2,152	21,898
3.2.7) Health and other services	43,146	4,755	47,901
3.2.8) Education, administration, government	28,608	2,243	47,901

Direct Impact is the change in the Washington economy due to Microsoft purchases and employment in the state. Total Impact represents the sum of the direct impact and the multiplier effect. Sources: Microsoft, US Bureau of Labor Statistics, the Washington State Office of Financial Management, the US Bureau of Economic Analysis, the Washington Employment Security Department, and author’s calculations.

While the impact of employment and labor compensation dominates, Microsoft business activity also had a profound effect on Washington due to its direct purchases of \$2.15 billion in goods and services from Washington suppliers (Table 2). Altogether, in-state purchases supported 36,204 jobs, including 3,870 in wholesale/retail, 32,254 in services (information, financial, professional and business services, and health and other services), and 3,951 in goods producing industries (Table 4, column 2).

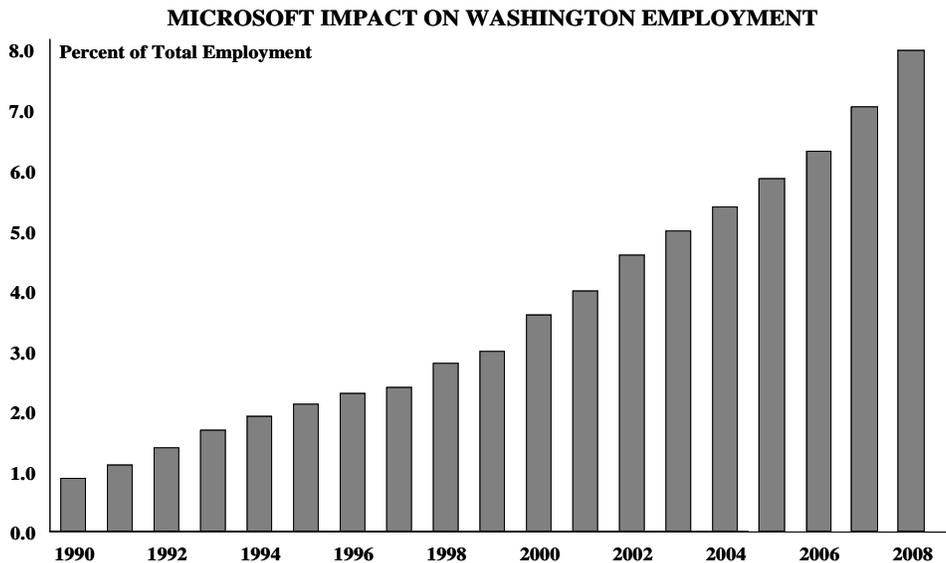
Major Findings: Sources of Microsoft’s Total Impact on Washington State

- *By far the greatest contribution of Microsoft to the Washington economy is through its employment and labor compensation, which supported 231,407 jobs. This included 220,953 in services and 10,454 in goods producing industries. In other words, the impact of Microsoft’s employment and labor compensation accounted for more than four-fifths of the company’s total impact on Washington employment.*
- *Aside from its employment and labor compensation, Microsoft also has a profound effect on Washington due to its direct purchases of \$2.15 billion in goods and services from Washington suppliers (Table 2). Altogether, in-state purchases supported 36,204 jobs, including 32,254 in services (information, financial, professional and business services, and health and other services), and 3,951 in goods producing industries (Table 4, column 2).*

Microsoft’s Total Impact on Employment and Output Growth in Washington State

Due to its rapid expansion, Microsoft has seen an eight-fold increase in its employment impact over the past 18 years (Figure 4). In 1990, the company employed 4,000 people in Washington state and indirectly supported another 21,270 jobs. Altogether this amounted to 0.9 percent of the state’s 2.4 million jobs. Eighteen years later, after adding 35,311 jobs to its Washington payroll, Microsoft accounted for 8.4 percent of state employment.

Figure 4



Source: Microsoft and author’s calculations.

Microsoft's own growth has therefore had a profound impact on Washington states' employment growth over the past 18 years. Between 1990 and 2008, Washington employment expanded at an average annual rate of 1.7 percent, while Microsoft's employment grew at 13.5 percent. Taking into account Microsoft's total impact on the economy, Table 5 shows that the company generated a total of 242,341 new jobs between 1990 and 2008. Microsoft thus accounted for 28.5 percent of the state's total job gain, and the company has been the single largest contributor to Washington's employment growth since 1990.

Table 5
MICROSOFT IMPACT ON WASHINGTON GROWTH, 1990-2008

	<u>Washington Change</u>		
	since 1990	Due to Microsoft since 1990	Percent of Washington Change
Gross state product (mils. \$08)	\$132,233	\$42,019	31.8%
Personal Income (mils \$08)	\$133,000	\$17,350	13.0%
Employment	850,035	242,341	28.5%
Estimated Population*	1,720,908	375,158	21.8%

Source: Microsoft, Washington State Office of Financial Management, Microsoft 2004 impact study, author's calculations. *Projection based on 2004 Impact Study.

Section Summary: Impact on Growth

- *From 1990 to 2008, Washington employment grew at an annual rate of 1.7 percent, while Microsoft employment expanded at a rate of 13.5 percent.*
- *Due to the rapid growth of Microsoft as a company, its employment impact increased ten-fold from 25,270 jobs in 1990 to 242,341 in 2008.*
- *Since 1990, Microsoft has been the single largest contributor to economic growth in Washington state, accounting for 28.5 percent of the total gain in state employment. (Table 5)*

4. CONCLUSION

Microsoft is the latest in the line of big businesses that have had a profound impact on the structure and performance of the Washington economy. Weyerhaeuser and Boeing are still mainstays in the state economy, but they are no longer major sources of growth. In fact, since 1990, timber harvest restrictions and technological advances in mills have reduced forest products employment significantly in the state. Despite Boeing's recent rebound and productivity gains, the trend has been a decline in aerospace jobs in the region over the past two decades.

In contrast, Microsoft has expanded rapidly in Washington state since the 1980s. From 1990 to 2008 the software company added 35,311 employees in the state, providing a vital boost to the economy. Directly and indirectly, Microsoft accounted for about 30 percent of Washington's employment growth since 1990 (see Table 5).

The increase in Microsoft's economic impact on the Washington state economy is directly linked to the company's dramatic increase in employment from 4,000 in 1990, to 28,237 in 2004, and 39,311 in 2008. In addition, gross wage compensation (which excludes stock compensation) increased from \$0.59 billion in 1995, to \$4.69 billion in 2004, and \$5.98 billion in 2008.¹² Finally, the growth of Microsoft as a global multinational company, with its main facilities in Washington state, has generated a rapid increase in purchases of local goods and services over time. Microsoft expenditures on Washington state goods and services grew from \$0.67 billion in 1995, to \$1.23 billion in 2004, and \$2.15 billion in 2008.¹³ As a consequence, Microsoft's employment impact also increased from 1.4 percent of total Washington employment, to 5.4 percent in 2004, and 8.4 percent in 2008.

While these numbers are impressive, they cannot adequately describe the role of Microsoft in the economy. Indeed, there are many immeasurable aspects of Microsoft's impact on the local economy. Unlike any other company in Washington's past, Microsoft has created immense wealth in the community, not only for its executives, but also for its employees and the many shareholders in the area. Moreover, like a magnet, Microsoft has drawn other software and high-tech companies to the region and has created a number of prominent startups. Some information technology companies have been attracted to the region to collaborate with Microsoft, while others have simply been taking advantage of the large pool of skilled workers that has been attracted to the region. Finally, several current and former Microsoft employees, the most prominent being Paul Allen, Steve Balmer, and Bill Gates, have drawn upon their riches and expertise to start new enterprises and charitable foundations in the area. These foundations have been exerting a profound financial and socioeconomic impact on the region that is not measured by this impact study.

¹² Adjusting for inflation, this amounts to \$0.83 billion in 1995, \$5.35 billion in 2004, and \$5.98 billion in 2008 dollars.

¹³ Adjusting for inflation, this amounts to \$0.94 billion in 1995, \$1.40 billion in 2004, and \$2.15 billion in 2008 dollars.

Appendix / Technical notes

DEFINITIONS AND CONVENTIONS

Gross State Product

Washington Gross State Product is the 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 to foreign countries and the rest of the United States). 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 2008 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 defined as the value of production or sales. Output is valued at producers' prices in 2008 dollars. For trade and transportation, output is the value of trade and transportation margins (mark-ups). Output measured in purchasers' prices (what customers pay) equals output measured in producers' prices (what producers receive) 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 proprietors (self-employed workers). In a given year, total employment is greater than 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 compensation, property income (dividends, interest, and rent), transfer payments, and contributions to social insurance. Labor compensation includes wages, salaries, proprietors' income, and other labor income earned by job-holders. Personal income is valued in 2008 dollars.

IMPACT ANALYSIS METHODOLOGY

Input-Output Models

The input-output model, as represented by the table of output, employment, and income multipliers, is the analytical method most commonly used to measure economic impacts. Seven input-output models for Washington State have been constructed. The most recent one was undertaken in 2006, using seven state agencies and legislative staff, under the direction of University of Washington Geography Professor William Beyers, and the Office of Financial Management (OFM) Assistant Director of Forecasting Division Dr. Irv Lefberg. OFM staff Dr. Ta-Win Lin served as the project coordinator. The model was

released in May 2008 and is described in Beyer, Lefberg, and Lin (2008).¹⁴

The state input-output model provides a detailed and complete picture of the state's economic structure, including inter-industry linkages, and the economy's dependence on U.S. domestic and international markets. The input-output model provides estimates of the interdependence of industrial sectors in the state economy. It reports the distribution of sales and purchases of each sector in the state economy. It reports business sales to industrial sectors and to final demand categories (households, investors, and governments) located in Washington State, as well as to markets outside of Washington State (exports to other parts of the United States, to foreign countries, and to the federal government).

The Washington State Input-Output Model also identifies purchases made by sectors from Washington industries, payments of labor compensation, other value added, and purchases made out-of-state. The model traces out the circular flows associated with these purchases and sales relationships. The input-output model can be formulated so that it can be used as an analytical tool allowing estimation of ripple effects on the state economy as a result of these interdependencies.

The estimated ripple effects on the state economy resulting from an external change can be summarized into the "multiplier" concept. Input-Output models can be used to estimate various types of multipliers. They simply show, given a specified economic change, the total impact on the state economy. An impact multiplier for Microsoft is defined as the ratio of Microsoft's total impact to its direct impact. Expressed as single numbers, multipliers are used as a quick reference for a summary measure of estimated total impacts.

¹⁴ Beyers, W, I. Lefberg, and T-W Lin. *The 2002 Washington Input-Output Table – Methodology and Data*. Washington State Office of Financial Management. May 2008.