Appendix C: Details of the Analysis

Appendix C-1

QUESTIONS RELATING TO TAX PRINCIPLES

The following questions were developed by the Committee and staff economists to direct the economic analysis of Washington's existing tax system.

In answering each of these questions the analysis will also answer further analytical questions such as: How much? Why? Is it getting better or worse? How do we compare to other states (where appropriate)?

Elasticity/Volatility

1) Do our tax revenues keep up with income?
   a) over the long run?
   b) during economic expansion?
   c) during economic downturns?

2) Have changes in our tax system such as exemptions, deductions and base broadening over the past ten years changed our elasticity?

3) Are our tax revenues stable?

Stability

1) Are our tax revenues predictable?

2) Is our tax system stable? If not, why not?

3) Has the rainy day fund been an effective tool for keeping the tax base stable?

4) How stable are the major local taxes?

5) How do changes in the state tax system affect the stability of local taxes?

Equity/Fairness

Ability to Pay

1) How regressive is our tax system (on both an income and wealth basis)?

2) Is our system regressive when looking at lifetime equity?

3) How do business taxes affect regressivity when passed through to households?

4) To what extent can households shift or export taxes (to business, the federal government, etc.)?

5) What taxes are on income, assets, and consumption?

Benefits Received

6) Do people/entities that receive benefits from the state pay a corresponding amount of tax for the benefits (who is paying taxes, how are they being spent (answer at a high level))?

7) Which of our taxes are tied to benefits received? What percentage are these taxes compared to the tax system? How does that percentage compare with the percentage of these taxes in other states?

8) Regionally, where are taxes generated, and where are they spent? (Answer to the degree that information is available.)

9) To what extent are taxes targeted and earmarked?

10) Do activities that create negative impacts pay a proportionate tax?

Horizontal Equity (Equity among similarly situated taxpayers)

11) Do similar businesses (businesses in the same industry) pay similar amounts of tax?

12) Do similar households (with similar income/household size) pay similar amounts of tax?

13) Do similar taxpayers in different locations pay significantly different taxes because of local taxes?

Perceived Equity

14) Do taxpayers think our tax system is fair?

15) Which taxes do taxpayers think are fair?

Adequacy

1) Do tax revenues keep up with, fall short of, or exceed change in personal income?

2) Do tax revenues keep up with, fall short of, or exceed the same level of services given changes in caseload levels (including school caseloads), infrastructure needs, and government administration needs?

3) Do *local* tax revenues keep up with, fall short of, or exceed the same level of services given changes in caseload levels (including school caseloads), infrastructure needs, and government administration needs?

4) Do state-required mandates decrease local government's ability to provide its core services?

5) Do tax revenues provide adequate funding for infrastructure needs such as transportation?

6) How do changes in demand for services compare to changes in personal income?

7) Does dedicated funding give policymakers the flexibility they need to respond to state and local shortages?

Economic Vitality
(Encourage commerce and business creation)

1) Do Washington taxes affect the competitive position of Washington businesses?

2) Do Washington taxes affect the ability to start and grow a new business?

3) Do Washington taxes affect the ability of established businesses to survive and grow?

4) Does our tax system (especially the B&O tax) affect businesses' ability to survive during economic downturns?

5) To what extent can Washington businesses export taxes (to their customers or to the federal government)?

6) Are Washington tax incentives effective and sufficient in encouraging firms to locate and remain in the state?

7) Do the effects of taxes on wages create a positive or negative impact on the competitive position of employers?

8) How much does the sales tax decrease in-state retail activity via leakage through remote sales and cross-border shopping?

9) What is the impact on economic vitality of government investment in education, transportation, and public infrastructure?

Economic Neutrality/Efficiency

1) Does Washington's tax structure cause Washington businesses to organize or conduct business in any inefficient ways?

2) Does Washington's tax structure affect the behavior of individuals (such as consumption or residency)?

3) What do people and businesses do to avoid taxes and how much do they do it?

4) Does the sales tax cause under-capitalization?

5) Are similar items and activities taxed equally?

Intersectoral/Vertical Equity

6) What percentage of tax is paid by businesses? By households?

7) Do big and small businesses within the same industry have similar tax burdens?

8) Do businesses in different industries have similar tax burdens?

9) Do new businesses and established businesses have similar tax burdens?

10) When new exemptions are created, do tax increases shift to other taxpayers?

11) Are our taxes administered equitably?

12) Are there any sectors or groups that don't pay a proportionate share of tax?

13) Are there significant activities that are not subject to taxation?

Transparency/"Lumpiness"

1) Does Washington have any hidden taxes?

2) Do any Washington taxes pyramid (i.e. apply layers of tax to the same item or activity)?

3) Are all tax liabilities clear to taxpayers when they make business decisions?

4) Is the timing of tax payments onerous?

Administrative Simplicity

1) Does our tax system impose record-keeping and/or paperwork obligations on taxpayers above and beyond that required for normal business operations and federal tax obligations?

2) How much does the tax system cost the state to administer compared to collections?

3) Do different local taxes cause administrative burdens for businesses located in more than one local jurisdiction?

4) Is there an additional compliance burden caused by different agencies being involved in collecting different taxes?

5) Do taxpayers and decision makers understand how our tax system works when they are voting or making tax decisions?

Harmony With Other States

1) Do incompatibilities between Washington's taxes and other states' taxes cause problems in tax equity, efficiency, economic vitality, compliance, or adequacy?

Home Ownership

1) Do taxes impede the ability to purchase and retain a home?

2) Does our tax system make the purchase of a home difficult for low-income households?

3) Does our tax system cause difficulties for fixed-income homeowners to retain their homes?

4) Do impact and mitigation fees increase the cost of homes?

Appendix C-2
DEDICATED TAX AS A PERCENT OF TOTAL TAX COLLECTIONS
1997/$Millions

State	Total Collections	Total Dedicated	Percent Dedicated	Rank
Alabama	$5,116.1	$4,460.5	87.2%	1
Nevada	2,178.4	1,404.0	64.5%	2
Tennessee	6,517.8	3,934.2	60.4%	3
Michigan	19,322.9	10,529.8	54.5%	4
Utah	3,108.0	1,684.1	54.2%	5
Montana	1,085.7	552.6	50.9%	6
New Jersey	13,008.2	6,207.4	47.7%	7
Wyoming	640.3	300.6	46.9%	8
Massachusetts	12,864.5	5,391.9	41.9%	9
New Mexico	3,542.9	1,170.3	33.0%	10
Arizona	6,783.0	2,088.6	30.8%	11
Illinois	16,882.7	5,078.7	30.1%	12
Mississippi	3,742.1	1,107.1	29.6%	13
Indiana	8,535.0	2,425.7	28.4%	14
Washington	10,482.3	2,743.7	26.2%	15
South Dakota	631.0	155.5	24.6%	16
Oklahoma	5,266.4	1,263.7	24.0%	17
Missouri	7,784.8	1,860.0	23.9%	18
North Dakota	845.3	201.7	23.9%	18
Virginia	9,116.9	2,134.5	23.4%	20
West Virginia	2,970.8	632.5	21.3%	21
Florida	19,637.3	4,105.4	20.9%	22
Ohio	16,181.4	3,217.8	19.9%	23
Idaho	1,964.2	388.0	19.8%	24
Maryland	8,216.0	1,498.9	18.2%	25
South Carolina	5,233.4	937.5	17.9%	26
Arkansas	3,917.7	643.4	16.4%	27
Oregon	4,452.1	729.4	16.4%	27
Nebraska	2,548.2	410.4	16.1%	29
Kansas	4,035.2	630.9	15.6%	30
North Carolina	12,177.6	1,852.0	15.2%	31
Vermont	822.8	122.3	14.9%	32
Kentucky	6,310.1	880.8	14.0%	33
Texas	21,187.9	2,857.4	13.5%	34
Iowa	5,205.0	672.4	12.9%	35
New Hampshire	944.5	120.2	12.7%	36
Colorado	5,076.3	612.9	12.1%	37
Louisiana	5,492.7	657.5	12.0%	38
Minnesota	10,730.6	1,287.5	12.0%	38
Maine	1,948.7	231.6	11.9%	40
New York	32,061.3	3,489.9	10.9%	41
Hawaii	3,096.0	329.7	10.6%	42
California	53,264.7	5,450.4	10.2%	43
Pennsylvania	18,168.6	1,506.0	8.3%	44
Delaware	1,758.8	138.1	7.9%	45
Wisconsin	9,627.8	762.6	7.9%	45
Rhode Island	1,588.0	123.6	7.8%	47
Connecticut	8,104.4	570.1	7.0%	48
Georgia	10,483.5	592.7	5.7%	49
Alaska	1,438.8	69.3	4.8%	50
Total	$416,098.7	$90,215.8	21.7%	

Source: Dedicated State Tax Revenues, Budget and Fiscal Research Services, Inc., June 2000

Appendix C-3

TAX VARIATION BY HOUSEHOLD INCOME AND SPENDING LEVELS

In the following four charts, the average tax interquartiles are graphed as a percent of outlays (spending) by households and household income. One can infer that sales tax has the most variation by comparing the interquartile range for all excise taxes with the interquartile range for property tax. There is more variation in all excise taxes. Sales tax is the only excise tax that is large enough to affect variation for individuals.

Chart 1

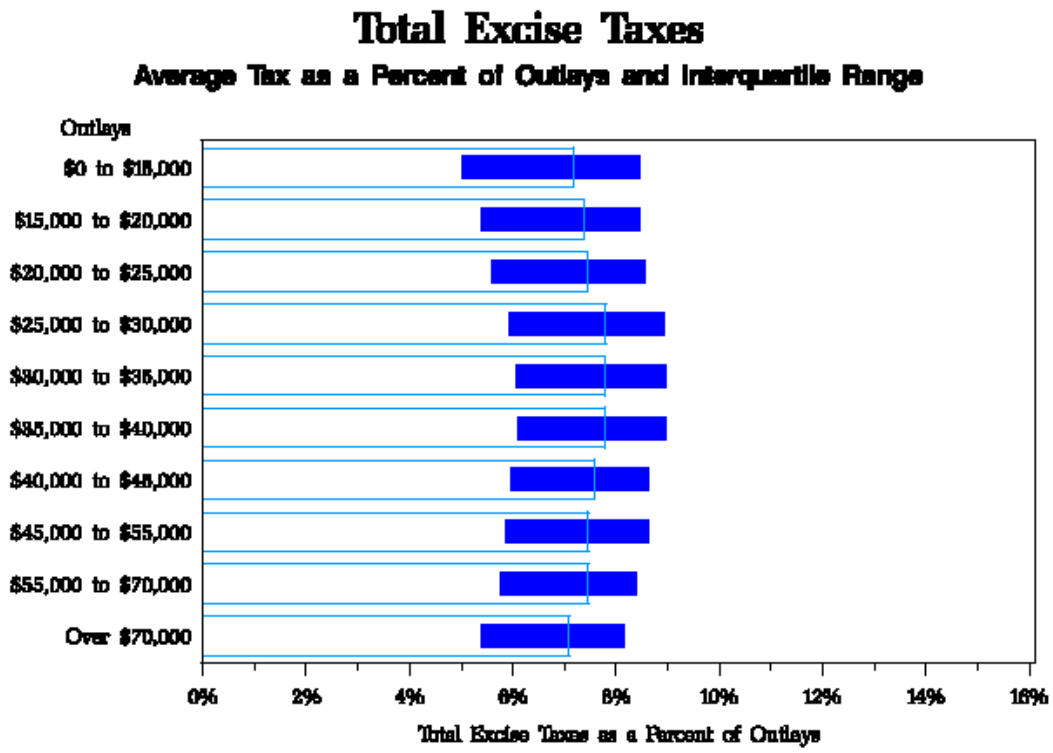
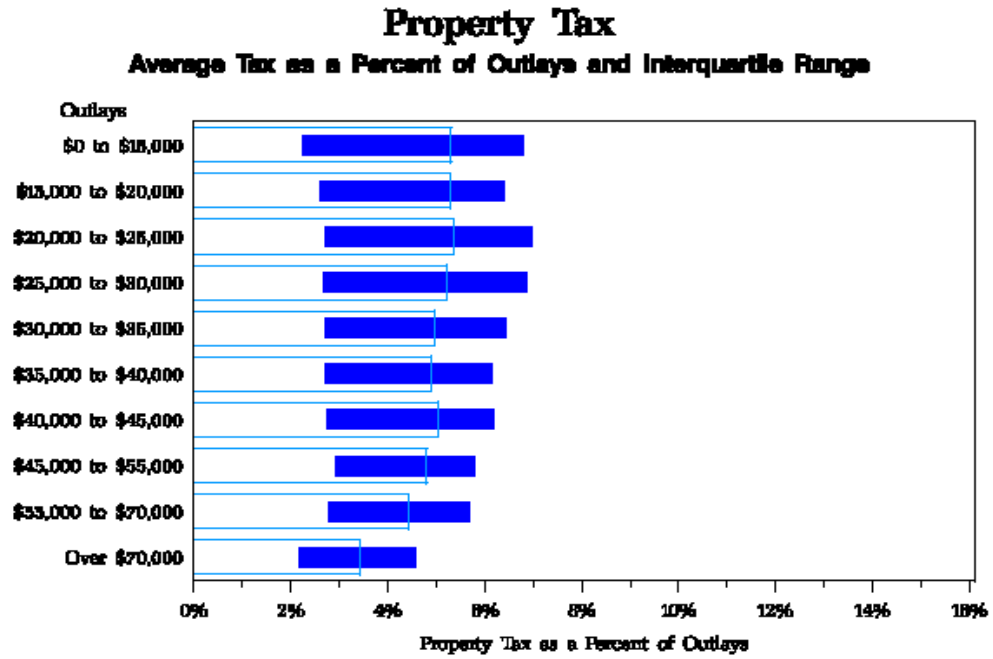


Chart 2



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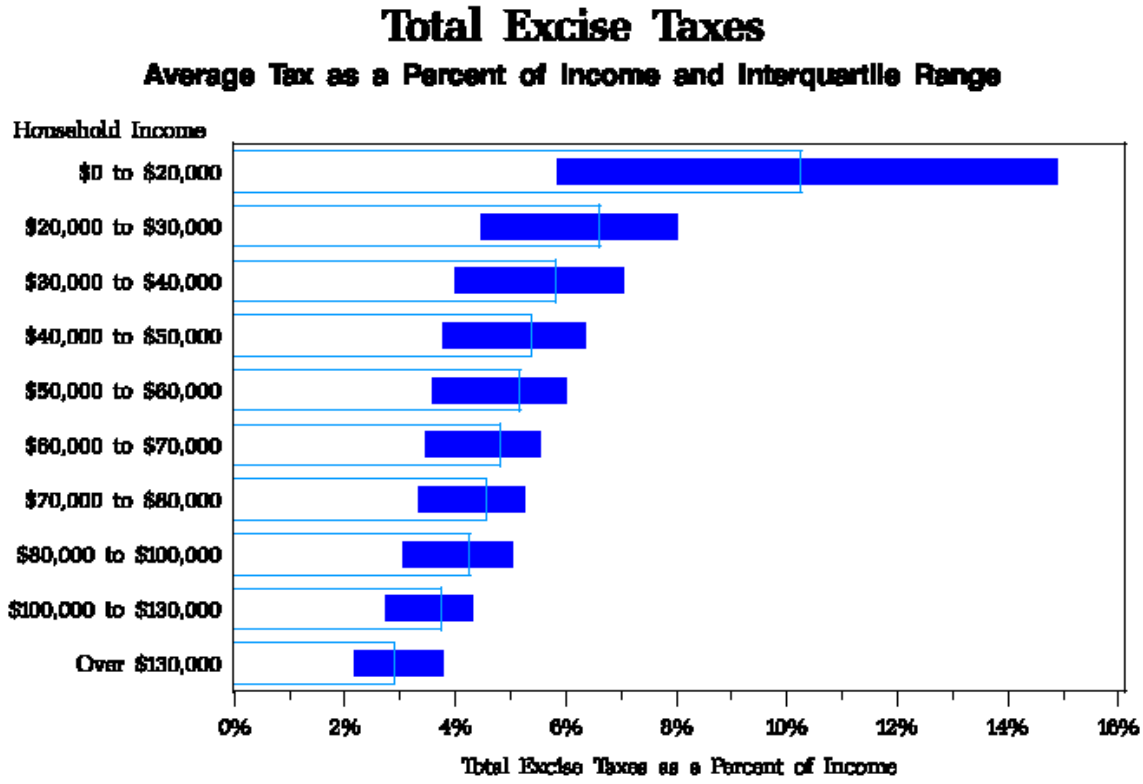

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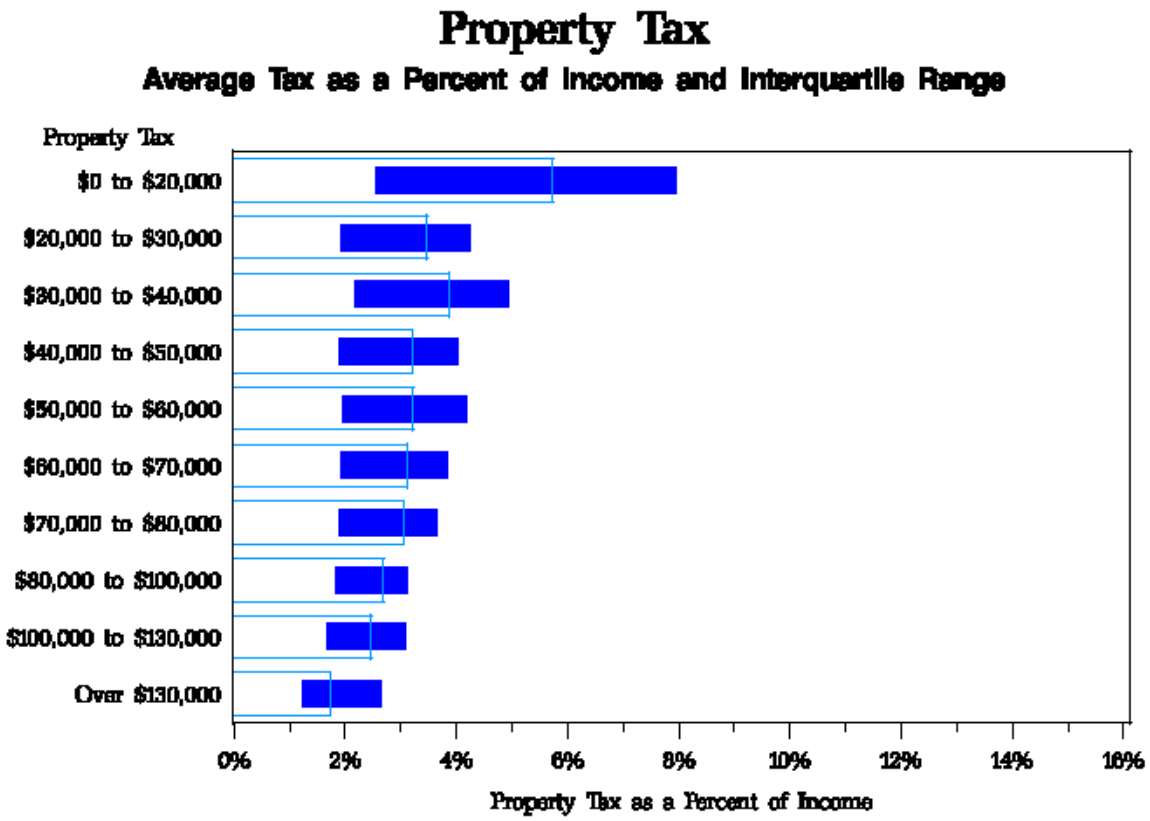

Source: Washington Excise Tax Microsimulation Model, April 29, 2002

Appendix C-4

TAX INCIDENCE INCLUDING FEDERAL INCOME TAX

The following tables show tax incidence for households at different income levels. Table 1 shows state and local taxes as a percentage of income for hypothetical households in Washington State compared to average taxes for 50 states plus the District of Columbia. (This data is from the study, *Tax Rates and Tax Burdens In The District of Columbia – A Nationwide Comparison: 2000*.) Table 2 shows state and local taxes plus federal income tax as a percentage of income. (Federal income taxes for the hypothetical households were calculated using data provided in the Washington, D.C. study.)

State and local taxes in Washington are regressive. They are also more regressive than the average taxes for all states. When federal income taxes are added, the total tax burden in Washington is progressive. Although the total Washington tax burden is not as progressive as the total average tax burden for all states, the difference between Washington and the U.S. average is not as great when federal taxes are added as when only state and local taxes are included.

Table 1

State and Local Taxes as a Percentage of Household Income Washington State Compared to the Mean of All 50 States Plus the District of Columbia

	$25,000 HH Income	$50,000 HH Income	$75,000 HH Income	$100,000 HH Income	$150,000 HH Income
State and Local Taxes for Washington State	8.5%	6.3%	6.3%	6.0%	5.8%
Mean State and Local Taxes for 50 States and DC	8.0%	8.0%	8.8%	9.0%	9.1%

Table 2

State and Local Taxes Plus Federal Income Tax
as a Percentage of Household Income
Washington State Compared to the Mean of All 50 States
Plus the District of Columbia

	$25,000 HH Income	$50,000 HH Income	$75,000 HH Income	$100,000 HH Income	$150,000 HH Income
State, Local and Federal Taxes for Washington State	12.3%	15.5%	17.8%	20.5%	23.3%
Mean State, Local and Federal Taxes for 50 States and DC	11.9%	17.2%	20.2%	23.4%	26.6%

Appendix C-5

SIMILAR ITEMS OR ACTIVITIES TAXED DIFFERENTLY

The following table describes examples of situations where similar items or activities are taxed differently.

Activity	B&O Tax Application	B&O Tax Rate (%)	Sales/Use/ Other Tax?
1. Movie rental	Retail	0.471	Sales tax
Movie ticket	Service	1.5	Exempt
2. Motor transportation (inter-city)	PUT	1.9	N/A
Urban transportation (within city limits)	PUT	0.6	N/A
3. Natural gas purchased from out-of-state supplier	N/A	N/A	Brokered natural gas tax
Electricity purchased from out-of-state supplier	N/A	N/A	Exempt
4. Food purchased from a restaurant	Retail	0.471	Sales tax
Food purchased from a grocery store	Retail	0.471	Exempt
Food purchased from a vending machine	Retail	0.471	57% taxable, 43% exempt
5. Wireless phone service	Retail	0.471	Sales tax
Nonresidential phone service (e.g. business, government)	Retail	0.471	Sales tax
Local residential phone service	Retail	0.471	Exempt
Long distance residential phone service	Retail	0.471	Sales tax
Coin-operated phone service	Retail	0.471	Exempt
6. Oil transported into WA via ships	N/A	N/A	Oil spill tax
Oil transported into WA via pipelines	N/A	N/A	Exempt

1. Movie rentals are retail sales. Movie rental businesses must collect and remit retail sales tax from persons who rent movies.
Movie theaters are service businesses. Movie tickets are not retail sales and are not subject to retail sales tax.

2. The motor transportation business consists of operating any motor propelled vehicle for the purpose of conveying persons or property for hire.
The urban transportation business consists of operating any motor propelled vehicle for the purpose of conveying persons or property for hire, except that the business must operate entirely within the corporate limits of any city or town, or within five miles of the corporate limits.
The same company is often engaged in both business activities and must determine its taxability on a trip-by-trip basis.

3. Natural gas purchased from an out-of-state supplier and brought into the state via one's own pipelines is subject to the brokered natural gas tax (a tax similar in structure to the use tax).
Electricity purchased from an out-of-state supplier and brought into the state via one's own wires is not subject to any form of use tax.

4. Food purchased from a restaurant or sold for immediate consumption is subject to the retail sales tax.
Food purchased from a grocery store is not subject to retail sales tax. However, food prepared "on site" at a grocery store by a person with a food handler's permit (salads, sandwiches) is subject to sales tax.
A specified percentage of food purchased from a vending machine is subject to the retail sales tax (57 percent taxable, 43 percent exempt). This percentage calculation is only applied to vending machines that sell only food. Vending machines that sell entirely taxable items (hot coffee, sodas) are subject to the full retail sales tax.

5. Cellular phone service is a retail service and subject to retail sales tax.
Nonresidential phone service (to businesses and government) is also a retail service and subject to sales tax.
Local residential phone service is a retail service but is exempt from retail sales tax.
Long distance residential phone service, however, is subject to sales tax.
Coin-operated phone service is also exempt from sales tax.

6. Oil and petroleum products brought into Washington via ships are subject to the oil spill tax on a per barrel basis.
Oil and petroleum products brought into Washington via pipelines are exempt from the oil spill tax.

Appendix C-6

EFFECTIVE TAX RATES BY SIZE OF FIRM
Calendar Year 2000

Table 1

Average Tax Rates by Size of Firm

STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES	LESS THAN $5,000,000	$5,000,000 TO $25,000,000	GREATER THAN $25,000,000
AG/ FORESTRY/ MINING - SICS 1-14	1.15%	1.30%	2.36%
CONSTRUCTION - SICS 15-17	1.78%	1.63%	1.81%
MANUF NONDURABLE - SICS 20-23, 26-31	1.72%	2.11%	1.58%
MANUF DURABLE - SICS 24, 25, 32-39	1.81%	1.66%	1.75%
TRANS/ COMM/ UTILITIES - SICS 40-49, 90s	2.10%	3.34%	2.52%
WHOLESALE - SICS 50-51	1.10%	0.66%	0.60%
RETAIL - SICS 52-59	2.04%	0.67%	0.62%
FINANCE/ INSURANCE/ REAL ESTATE – SICS 60-67	1.29%	1.54%	1.21%
SERVICES - SICS 70-79	2.26%	1.82%	1.63%
PROFESSIONAL SERVICES - SICS 80-89	1.84%	1.88%	1.82%

Table 2

Average Sales Tax Rates by Size of Firm

SIC CODES	LESS THAN $5,000,000	$5,000,000 TO $25,000,000	GREATER THAN $25,000,000
AG/ FORESTRY/ MINING - SICS 1-14	0.17%	0.57%	1.74%
CONSTRUCTION - SICS 15-17	0.45%	1.07%	1.27%
MANUF NONDURABLE - SICS 20-23, 26-31	0.41%	1.60%	1.10%
MANUF DURABLE - SICS 24, 25, 32-39	0.36%	1.10%	1.21%
TRANS/ COMM/ UTILITIES - SICS 40-49, 90s	0.17%	1.83%	1.05%
WHOLESALE - SICS 50-51	0.22%	0.18%	0.15%
RETAIL - SICS 52-59	0.35%	0.16%	0.11%
FINANCE/ INSURANCE/ REAL ESTATE – SICS 60-67	0.23%	0.30%	0.21%
SERVICES - SICS 70-79	0.41%	0.85%	0.81%
PROFESSIONAL SERVICES - SICS 80-89	0.30%	0.53%	0.60%

Table 3

Average B&O/Public Utility Tax Rates by Size of Firm

SIC CODES	LESS THAN $5,000,000	$5,000,000 TO $25,000,000	GREATER THAN $25,000,000
AG/ FORESTRY/ MINING - SICS 1-14	0.32%	0.55%	0.55%
CONSTRUCTION - SICS 15-17	0.42%	0.48%	0.48%
MANUF NONDURABLE - SICS 20-23, 26-31	0.41%	0.44%	0.42%
MANUF DURABLE - SICS 24, 25, 32-39	0.42%	0.48%	0.48%
TRANS/ COMM/ UTILITIES - SICS 40-49, 90s	0.93%	1.21%	1.28%
WHOLESALE - SICS 50-51	0.44%	0.46%	0.44%
RETAIL - SICS 52-59	0.41%	0.46%	0.48%
FINANCE/ INSURANCE/ REAL ESTATE – SICS 60-67	0.63%	1.11%	0.93%
SERVICES - SICS 70-79	0.72%	0.81%	0.74%
PROFESSIONAL SERVICES - SICS 80-89	0.92%	1.21%	1.12%

Table 4

Average Property Tax Rates by Size of Firm

SIC CODES	LESS THAN $5,000,000	$5,000,000 TO $25,000,000	GREATER THAN $25,000,000
AG/ FORESTRY/ MINING - SICS 1-14	0.58%	0.18%	0.06%
CONSTRUCTION - SICS 15-17	0.69%	0.08%	0.06%
MANUF NONDURABLE - SICS 20-23, 26-31	0.66%	0.07%	0.06%
MANUF DURABLE - SICS 24, 25, 32-39	0.67%	0.08%	0.06%
TRANS/ COMM/ UTILITIES - SICS 40-49, 90s	0.50%	0.30%	0.19%
WHOLESALE - SICS 50-51	0.35%	0.02%	0.01%
RETAIL - SICS 52-59	1.15%	0.06%	0.04%
FINANCE/ INSURANCE/ REAL ESTATE - SICS 60-67	0.41%	0.14%	0.08%
SERVICES - SICS 70-79	0.98%	0.17%	0.09%
PROFESSIONAL SERVICES - SICS 80-89	0.53%	0.14%	0.10%

Appendix C-7

EFFECTIVE TAX RATES OF NEW AND ESTABLISHED FIRMS
Calendar Year 2000

Table 1

Average Tax Rates of New and Established Firms

SIC CODES	NEW FIRM	ESTABLISHED FIRM
AG/ FORESTRY/ MINING - SICS 1-14	2.30%	0.93%
CONSTRUCTION - SICS 15-17	2.09%	1.67%
MANUF NONDURABLE - SICS 20-23, 26-31	2.23%	1.58%
MANUF DURABLE - SICS 24, 25, 32-39	2.39%	1.67%
TRANS/ COMM/ UTILITIES - SICS 40-49, 90s	2.31%	2.06%
WHOLESALE - SICS 50-51	1.20%	1.02%
RETAIL - SICS 52 - 59	2.99%	1.69%
FINANCE/ INSURANCE/ REAL ESTATE - SICS 60-67	1.60%	1.22%
SERVICES - SICS 70-79	2.80%	2.06%
PROFESSIONAL SERVICES - SICS 80-89	2.57%	1.67%

Table 2

Average Sales Tax Rates of New and Established Firms

SIC CODES	NEW FIRM	ESTABLISHED FIRM
AG/ FORESTRY/ MINING - SICS 1-14	0.32%	0.15%
CONSTRUCTION - SICS 15-17	0.43%	0.46%
MANUF NONDURABLE - SICS 20-23, 26-31	0.40%	0.45%
MANUF DURABLE - SICS 24, 25, 32-39	0.37%	0.38%
TRANS/ COMM/ UTILITIES - SICS 40-49, 90s	0.17%	0.18%
WHOLESALE - SICS 50-51	0.18%	0.22%
RETAIL - SICS 52-59	0.43%	0.31%
FINANCE/ INSURANCE/ REAL ESTATE - SICS 60-67	0.24%	0.23%
SERVICES - SICS 70-79	0.40%	0.41%
PROFESSIONAL SERVICES - SICS 80-89	0.35%	0.29%

Table 3

Average B&O/Public Utility Tax Rates of New and Established Firms

SIC CODES	NEW FIRM	ESTABLISHED FIRM
AG/ FORESTRY/ MINING - SICS 1-14	0.52%	0.28%
CONSTRUCTION - SICS 15-17	0.44%	0.41%
MANUF NONDURABLE - SICS 20-23, 26-31	0.42%	0.41%
MANUF DURABLE - SICS 24, 25, 32-39	0.46%	0.42%
TRANS/ COMM/ UTILITIES - SICS 40-49, 90s	0.86%	0.96%
WHOLESALE - SICS 50-51	0.37%	0.45%
RETAIL - SICS 52-59	0.47%	0.39%
FINANCE/ INSURANCE/ REAL ESTATE - SICS 60-67	0.67%	0.63%
SERVICES - SICS 70-79	0.79%	0.69%
PROFESSIONAL SERVICES - SICS 80-89	1.01%	0.90%

Table 4

Average Property Tax Rates of New and Established Firms

SIC CODES	NEW FIRM	ESTABLISHED FIRM
AG/ FORESTRY/ MINING - SICS 1-14	1.36%	0.43%
CONSTRUCTION - SICS 15-17	1.04%	0.55%
MANUF NONDURABLE - SICS 20-23, 26-31	1.17%	0.45%
MANUF DURABLE - SICS 24, 25, 32-39	1.24%	0.48%
TRANS/ COMM/ UTILITIES - SICS 40-49, 90's	0.75%	0.41%
WHOLESALE - SICS 50-51	0.53%	0.26%
RETAIL - SICS 52-59	1.98%	0.86%
FINANCE/ INSURANCE/ REAL ESTATE - SICS 60-67	0.67%	0.34%
SERVICES - SICS 70-79	1.48%	0.79%
PROFESSIONAL SERVICES - SICS 80-89	1.08%	0.40%

Appendix C-8

NONCOMPLIANCE BY INDUSTRY, AGE AND SIZE OF FIRM

Noncompliance varies by industry, size of firm and age of firm, as can be seen in the following tables. Tables are from the Department of Revenue's 1996 Compliance Study.

Table 1

Total Noncompliance by Industry

	Estimated Annual Noncompliance	Unreported Percentage of Taxable Income	Unreported Percentage of Tax Liability
Construction	$24,526,945	0.225%	3.6%
Manufacturing	16,742,878	0.033	3.5
Transport/Utility	2,500,376	0.026	0.8
Wholesale	10,075,328	0.047	3.4
Retail	29,787,124	0.091	1.5
Finance/Real	7,612,625	0.081	4.8
Service 7000	33,802,776	0.276	5.3
Service 8000	9,590,462	0.089	4.5
Other	1,087,360	0.060	3.5
Total	$145,725,874	0.081%	2.8%

As can be seen from Tables 2 and 3, new firms have a higher noncompliance rate than established firms. Ignorance of the law is the greatest reason for noncompliance, occurring 34 percent of the time. Computing errors accounted for another 26 percent of compliance errors. New firms are more likely to make these types of mistakes.

Table 2

Total Noncompliance by Age of Firm

	Estimated Annual Noncompliance	Unreported Percentage of Taxable Income	Unreported Percentage of Tax Liability
Newer Firms	$30,391,738	0.255%	6.4%
Older Firms	$115,334,137	0.050%	1.9%
Total	$145,725,874	0.081%	2.8%

Small firms are much less compliant than large firms. One reason for this is that the Department of Revenue administrative efforts such as audit and collection are less cost effective applied to small firms compared to large firms.

Table 3

Total Noncompliance by Size of Firm

Annual Gross Income $Thousands	Estimated Annual Noncompliance	Unreported Percentage of Taxable Income	Unreported Percentage of Tax Liability	Avg. Non-compliance Per Firm
$100 <	$27,805,014	1.750%	19.9%	$199
$100-500	18,067,570	0.265	4.9	331
$500-$1,000	27,402,879	0.363	8.8	1,340
$1,000-5,000	23,060,282	0.098	2.3	1,059
$5,000-10,000	6,785,258	0.036	1.3	1,200
$10,000-50,000	13,879,921	0.036	1.3	4,027
> $50,000	28,724,950	0.034	1.7	60,273
Total	$145,725,874	0.081%	2.8%	$591

Appendix C-9

SIGNIFICANT ACTIVITIES NOT SUBJECT TO TAXATION

The following is a short discussion of the major sectors of Washington's economy that are not subject to taxation, either as a tax policy choice made by the Legislature or the voters, or because of state constitutional prohibitions.

Income of Individuals

An initiative approved by the voters in 1932 (70 percent yes vote) provided for a statutory personal and corporate net income tax with rates graduated from 1 percent to 7 percent. The Washington State Supreme Court in a 5 to 4 decision in 1933 declared the statute to be unconstitutional on the grounds that income is property because the 14th Amendment states that property includes "everything, whether tangible or intangible, subject to ownership…." Article VII, Section 1, of the Constitution requires that "all taxes shall be uniform upon the same class of property within the territorial limits of the authority levying the tax…."

Consequently, any income tax to be constitutional must be uniform in its application. The effective tax rate (tax as a percent of income) must be the same for all persons subject to the tax. A graduated income tax is obviously not uniform because the effective rates are different for different income classes. To the extent that a proposed income tax contains personal exemptions and deductions, they must be the same for all persons in order to have the effective rate be uniform.

In order for a nonuniform income tax to be imposed, Article VII must be amended or the Court must reverse its 1933 decision (see Appendix B). Proposed amendments to the Constitution must emanate from the Legislature (approved by two-thirds vote in each House) and be approved by the voters (majority).

Rental of Real Property

The 1959 Legislature enacted a law that imposed the B&O tax (rate 0.25 percent) on the gross income of any person, exceeding $300 per month, derived from the business of renting or leasing real estate. The law was immediately challenged and declared unconstitutional by the Washington State Supreme Court in 1960.

The Court ruled that the tax on rental income is a tax on property, not an excise tax. Furthermore, it said that it was a tax upon the real estate itself, as is, thus a second tax upon real estate (the other being the property tax itself). The Court also noted that there is no B&O tax levied on unrented real estate. Because of the exclusion of gross income of under $300 and it being a second tax on real property, the B&O tax on rental income failed to meet the uniformity requirements of Article VII.

Consequently, an amendment to Article VII would be required to impose a B&O tax on the gross income from the rental or lease of real property.

Agricultural Production

Income from growing or producing any agricultural or horticultural crop, animals, birds, fish, poultry, eggs, fur, etc. is exempt from the B&O tax if the products are sold at wholesale. The exemption does not extend to agricultural products manufactured by producers or to retail sales of agricultural products by producers.

The exemption for agricultural products is solely a legislative policy choice. It has been in law since the B&O tax was created in 1935. It was presumably enacted to aid an industry that was severely depressed in 1935. The exemption recognized low profit margins that prevailed in this industry, high transportation costs, and the fact that as a group farmers have little or no ability to affect the prices received for their products and were therefore unable to pass the cost of the tax on to their customers.

Investment Income of Nonfinancial Business

The B&O tax applies to the gross receipts derived from various business activities, including income from investments. Prior to legislation enacted in the 2002 session there was a specific deduction allowed for "amounts derived by persons, other than those engaging in banking, loan, security, or other financial businesses, from investments or the use of money as such…." None of the key terms were defined in statute.

In 1976 the Washington State Supreme Court established the principle that for the B&O tax to apply to investment income, the business' primary purpose and objective must be to earn income through the handling and investment of a significant amount of funds. The case involved a construction company, health care providers, a brewer, and others, each of which earned income through investing excess funds in instruments such as time certificates, commercial paper, stocks, bonds, real estate notes, mortgages, etc. The Court decided that these businesses were not engaging in banking, loan or security activities, nor were they "other financial businesses" within the meaning of the statute. The Court's reasoning was that earning income from investments was not their primary purpose or objective, and the amounts earned represented a very small portion of their gross receipts.

The principle established in 1976 remains in place. It is a statutory, not a constitutional, matter and could be changed by the Legislature. Legislation enacted in the 2002 session did not change this principle. The 2002 bill narrowed coverage of current law and clarified its application. The law now clearly states that income derived from the following activities are not deductible for purposes of the B&O tax: amounts received from loans or the extending of credit and amounts received by a banking, lending, or security business. Also not taxed is income from loans between subsidiary entities and a parent entity or between subsidiaries of a common parent if

such income is less than 5 percent of the gross receipts of the business. The terms "banking business," "lending business," and "security business" are defined. The previously used and confusing term "other financial business" is no longer part of the statute.

Food for Home Consumption

Passed by initiative in 1977 (54 percent yes vote), food for home consumption is exempt from state and local sales taxes. The exemption does not extend to the B&O tax. The exemption covers groceries and other unprepared food products. It does not cover items such as carbonated beverages, dietary supplements, seeds for growing plants, or any food handled on the vendor's premises which by law requires the vendor to have a food and beverage service worker's permit (prepared sandwiches, pizzas, cooked chicken, deli trays, salad bars, etc.).

This exemption lessens the regressivity of the sales tax (i.e., provides proportionately greater relief for low-income persons) and reduces the cost of essential items for household consumption. The exemption was temporarily removed in 1982 for fourteen months (May 1982 - June 1983). Twenty-eight states, including Washington, have sales tax exemptions for food.

Appendix C-10

SUMMARY OF TAXPAYER PERCEPTION SURVEYS

The following is a summary of the major findings of taxpayer surveys conducted in four states: Minnesota, Georgia, Colorado, and Tennessee. Each state asked citizens a wide variety of questions, not all related to taxation. The summary for each state centers on those questions that are most closely related to the issue of tax fairness and the characteristics of the tax system and individual tax sources that were mentioned as reasons for considering a tax as being fair or not fair. The relevant questions are either quoted or paraphrased and a summary of the answers is given.

Minnesota

The survey was prepared for the Minnesota Department of Revenue by Anderson, Niebuhr & Associates and published in August 2001. Taxes included in the survey included the state income tax, the state sales tax, and local property taxes.

Q: Compared to most other states, do you believe that, overall, Minnesota taxpayers pay much more, more, about the same, or less state and local tax?

A: Nearly one-quarter (27 percent) believed they paid much more tax and nearly half (47 percent) felt they paid more tax than taxpayers in other states.

Q: How satisfied are you with the overall tax system in Minnesota?

A: Taxpayers were most satisfied with fairness based on ability to pay (39 percent very satisfied/satisfied). However, 30 percent were dissatisfied or very dissatisfied with this aspect of the overall tax system. Taxpayers were most dissatisfied with the amount of taxes paid overall (45 percent dissatisfied/very dissatisfied). As age increased, so did their satisfaction with the amount of taxes they paid overall.

Q: How satisfied are you with the Minnesota income tax, local property taxes, and sales tax in terms of: understandability, fairness based on ability to pay, fairness based on the extent to which taxpayers are treated equally, predictability from year to year, the cost or time needed to comply, and the amount of tax paid?

A: Income Tax. Nearly six in ten (58 percent) were very satisfied or satisfied with the cost or time needed to comply. Over half (53 percent) were very satisfied or satisfied with the predictability of the income tax from year to year. Taxpayers were most dissatisfied with the amount of income taxes paid (47 percent dissatisfied/very dissatisfied) and fairness based on the extent to which all taxpayers were treated equally (39 percent dissatisfied/very dissatisfied).

A: Local Property Taxes. Over half (54 percent) were very satisfied or satisfied with their understanding of what property taxes paid for. More than four in ten (43

percent) were very satisfied or satisfied with the predictability of their property taxes from year to year. Taxpayers were most dissatisfied with the amount of property taxes paid (47 percent dissatisfied/very dissatisfied).

A: Minnesota Sales Tax. Nearly two-thirds (64 percent) were very satisfied or satisfied with the fairness of the sales tax based on the extent to which all taxpayers were treated equally. Approximately six in ten (59 percent) were very satisfied or satisfied with their understanding of what was taxed under the sales tax and its fairness based on their ability to pay. Taxpayers were the most dissatisfied with the amount of sales tax paid (33 percent dissatisfied/very dissatisfied).

Q: How satisfied are you with the amount of taxes paid?

A: Taxpayers were most satisfied with the sales tax (45 percent very satisfied/ satisfied) followed by the income tax (32 percent), local property tax (31 percent), and the overall amount of taxes paid (27 percent).

Q: How satisfied are you with fairness of taxes based on ability to pay?

A: Taxpayers were most satisfied with the sales tax (59 percent very satisfied/ satisfied), followed by the income tax (46 percent), the overall tax system (39 percent) and local property taxes (38 percent).

Q: How satisfied are you with fairness based on the extent to which taxpayers are treated fairly?

A: Taxpayers were most satisfied with the fairness of the sales tax (64 percent very satisfied/satisfied), followed by local property taxes (34 percent), the overall tax system (32 percent) and the income tax (31 percent).

Q: How satisfied are you with the predictability of taxes from year to year?

A: Taxpayers were most satisfied with the predictability of the income tax (53 percent very satisfied/satisfied), followed by local property taxes (43 percent).

Q: How satisfied are you with the understandability of taxes?

A: Residents were most satisfied with their understanding of the sales tax (60 percent very satisfied/satisfied), followed by the income tax (44 percent), and local property taxes (38 percent).

Q: How important are these tax issues to you (taxpayers treated equally, attractiveness/competitive for business, understandability, taxes based on ability to pay, raising funds for services, responsible for raising taxes for services, predictability of amount, and raising funds equally from three tax types)?

A: The issues that were most important were making sure that taxpayers were treated equally (86 percent essential/very important), followed by making Minnesota an attractive and competitive place for business (85 percent), and making sure the tax system was simple and easy to understand (83 percent). Taxpayers were least concerned about making sure the tax system raises revenue equally from income, sales, and property (49 percent essential/very important).

Colorado

The survey was conducted for the Colorado Commission on Taxation by Ciruli Associates based on a telephone survey of 902 adult residents of Colorado. The survey took place from July 30 to August 9, 2001.

Q: Among the following taxes, which, if any, are you most likely to support an increase for?

A: Topping the list of those taxes chosen was the sales tax (32 percent), followed by the gas tax (11 percent), property tax (8 percent), motor vehicle tax (6 percent), and income tax (4 percent). Some 37 percent indicated "none" and 2 percent said "I don't know" or refused to answer.

Q: What tax would you most like to be lowered?

A: The preferred choice was the income tax (38 percent), followed by the property tax (29 percent), gas tax (17 percent), sales tax (8 percent), and motor vehicle tax (4 percent).

Q: Do you consider the amount of state income tax you have to pay as too high, about right or too low?

A: The majority of people thought the amount was about right (58 percent), followed by 34 percent who thought the amount was too high.

Q: Do you consider the state income tax which you have to pay this year as fair?

A: Answering yes were 62 percent, followed by 31 percent who said no, and 6 percent who either don't pay income tax or did not know/refused to answer.

Q: Do you consider the amount of state sales tax you have to pay as too high, about right, or too low?

A: Answering too high were 42 percent, about right 53 percent, with 2 percent too low and 3 percent didn't know/refused to answer.

Q: Do you regard the state sales tax which you have to pay this year as fair?

A: Saying yes were 60 percent, 36 percent said no, and 4 percent said they didn't know/refused to answer.

Q: Do you believe the percentage of income tax that people pay on their income should be higher for taxpayers with higher income or the same percentage for all taxpayers?

A: Some 47 percent said higher, 51 percent said the same and 2 percent said they didn't know/refused to answer.

Q: At the present time, business and commercial property in Colorado pays three times the taxes as that of a private residence having the same value. Is this a good idea or not a good idea?

A: People responding that it was a good idea were 37 percent, while 51 percent said it was not a good idea. Twelve percent didn't know or refused to answer.

Q: Currently, property is taxed differently depending on its use. Agricultural property is taxed less, commercial property more, and residential property taxed in the middle. Is taxing land differently on its use fair or not fair?

A: Persons responding that it was fair totaled 69 percent, while 22 percent said it was not fair. Nine percent did not know or refused to answer.

Tennessee

Middle Tennessee State University conducts an annual telephone poll. This one was conducted February 18 through March 1, 2002 by college students. They interviewed 742 people age 18 or older who were chosen at random.

Q: In general, would you strongly favor, favor, oppose, or strongly oppose establishing a state personal income tax, or aren't you sure?

A: Only about one in four residents (23 percent) expressed support for an income tax. A clear majority (58 percent) expressed opposition, and a notable 19 percent said they weren't sure or didn't know.

Q: Would you favor enactment of an income tax if it meant ending the sales tax on groceries and lowering the sales tax on other items?

A: The proportion of supporters rose to 46 percent, and the proportion of opponents slid to 38 percent. The remaining 16 percent expressed uncertainty. Majority support came from those in the 18 to 34 age bracket and opposition outweighed support among older Tennesseans, especially those with no minor children living at home.

Q: Would you favor enactment of an income tax if the proceeds were to be used for education?

A: Fifty-two percent of state residents indicated support. Opposition held at 39 percent, and the proportion of those expressing uncertainty dropped to 9 percent. Strongest support came from college-educated individuals, especially those aged 18 to 34, particularly those who were female, and weakest support came from less-educated persons.

Q: If there is to be an income tax, should it charge everyone the same amount per dollar of income or charge wealthier people more per dollar of income than poorer people?

A: A flat income tax was the preference of 59 percent of the people. Only 36 percent would opt for a graduated income tax that would charge wealthier people more per dollar of income. Preference for a flat income tax was consistent across all income levels and varied little across most other demographic groups.

Georgia

The Georgia State Poll was a telephone survey of adults 18 and over who live in Georgia. It was conducted by the Applied Research Center of Georgia State University. Residents were randomly selected, and 782 residents were interviewed from January 18 - February 20, 2001 on a variety of public policy issues.

Q: Which of the following Georgia taxes do you think is the most fair? Choices were the state personal income tax, state corporate income tax, sales tax, property tax, and gas tax.

A: The sales tax was selected by substantially more respondents than were any other of the other taxes. Nearly 47 percent selected the sales tax, while the personal income tax was selected by 20.6 percent, followed by the property tax (12.5 percent), corporate income tax (10.5 percent), and the gas tax (9.6 percent). These results were consistent with national surveys conducted several years ago by the Advisory Commission on Intergovernmental Relations. The percentage choosing the sales tax as the most fair increased with family income, while the percentage choosing the property tax declined with family income. The percentage selecting the personal income tax was highest for the middle income group ($25,000 to $49,999) and was smallest for the highest income group ($55,000 or more).

Q: In your opinion, are the state and local taxes that the poor pay in Georgia much too high, too high, about right, too low, or much too low?

A: "Much too high" or "too high" was selected by 65 percent of the respondents. Only 7.2 percent said that the taxes on the poor were "too low" or "much too low." In general, respondents with lower family income were more likely to state that the taxes on the poor are high (69.6 percent) than respondents with higher income (52 percent). There was essentially no difference by age or by housing tenure.

Q: Would you support reducing state taxes on any of the following groups even if it meant increasing taxes on everyone else?

A: The group for which the largest percentage of the respondents said they would support a reduction was the "elderly" (66.3 percent). The "poor" received the second highest percentage (59.3 percent), followed by "families with children" (53.2 percent). Tax reductions for the "rich" received the support of 22.4 percent and only about 4 percent supported a tax reduction for all the groups. Between 24 percent and 33 percent said they would support a tax reduction for businesses. A higher percentage (48.3 percent) said they would support a tax reduction for "farmers."

Q: On a scale of 1 to 5, with 1 being Strongly Agree, please indicate how strongly you agree or disagree with each of the following statements: "The state should not collect sales tax when an item like a book is purchased over the Internet," and

"Someone who buys a book over the Internet should pay the same sales tax as someone who buys the book from a local store."

A: Almost 50 percent agreed with the first statement, while 55.4 percent agreed with the second statement. It would appear that there were substantial differences of opinion regarding the proper taxation of sales made over the Internet. Of the respondents who agreed with the first statement, 46.8 percent also agreed with the second.

Q: Respondents were asked to indicate on the same 1 to 5 scale, with 1 being Strongly Agree and 5 being Strongly Disagree, how strongly they agreed or disagreed with the following statements.

1. Property taxes should be based on the price a homeowner originally paid for the home rather than the current market price, even if that means property taxes on similar homes could be different.
2. It would be fair for the state government to give part of its state sales tax revenue to poorer municipal and county governments.
3. The state government should increase the state sales tax from the current 4 percent rate to 7 percent in order to eliminate all property taxes.
4. The federal government should replace the current personal income tax with a system in which everyone pays the same rate, i.e., a flat tax.

A: Statement 1. Fifty percent agreed with statement 1, while 32.9 percent disagreed. Among owners, 48.2 percent agreed, while 53.9 percent of renters did. The level of support was much lower than the percentage of voters who voted in favor of such a change in various counties in Georgia.

Statement 2. Fifty-five percent agreed and 20.6 percent disagreed.

Statement 3. Fifty-three percent agreed and 39.5 percent disagreed. This result reinforced that respondents thought the sales tax was the most fair tax.

Statement 4. Fifty-three percent agreed and 34.4 percent disagreed. Respondents were supportive of eliminating or at least reducing the progressivity of the income tax.

Appendix C-11

TAXATION OF EXTERNALITIES

Development Impact Fees

The Growth Management Act of 1990 authorized cities and counties in Washington State to impose fees on developers of property to mitigate the impact of new development on public infrastructure. Impact fees are most often used for such facilities as roads, water and sewer systems, and schools. The purpose and size of the fees must be reasonably related to the new development and must be used for public facilities where the benefits are reasonably related to the new development.

Development impact fees appear to be the most prevalent and the highest in King County where school fees can be as high as $4,186 per dwelling and transportation mitigation fees can be as high as $7,535 per dwelling in a residential development.

Environmental Taxes

Washington State has several taxes that are imposed on activities perceived to be harmful to the environment. Revenues from these taxes are dedicated to programs designed to reduce these externalities. The following table shows Washington's taxes on externalities, the incidence of the tax, and the purpose for which the funds are dedicated.

Type of Tax	Incidence of the Tax	Dedicated Purpose of Tax
Petroleum Products Tax	Possession of petroleum products	Pollution Control Liability Fund and Fund Insurance related to leakage of underground storage tanks
Oil Spill Tax	Reception of crude oil or petroleum products at a marine terminal from a waterborne vessel	Oil spill response programs and oil spill clean up
Hazardous Substance Tax	First possession of certain "hazardous" items within the state	State and local hazardous waste management projects
Solid Waste Collection Tax	Use of services of a solid waste collection business	Local government public works projects
Litter Tax	Sale of targeted items deemed most likely to contribute to litter, such as food and beverage products, and paper products	Youth litter patrol programs and education programs relating to litter control and recycling
Wood Stove Fee	Sale of a wood stove	Education about effects of wood stove smoke on air quality

Washington is not alone in the imposition of taxes on externalities. As of 2001, 40 states imposed one or more taxes specifically designed to generate revenue from activities that are perceived harmful to the environment. Taxes that are imposed by other states but not imposed by Washington State include: hazardous waste taxes, taxes on underground storage tanks, nuclear facility and waste fees, sewerage, and tire taxes.

Appendix C-12

EFFECTIVE TAX RATES ON VALUE ADDED AND THE DEGREE OF PYRAMIDING IN THE GROSS RECEIPTS TAX

I. Methodology

Gross receipts tax rates are converted into effective tax rates on value added with the use of input-output data from the Washington State Implan model. The ratio of those two tax rates can be used to measure the degree of pyramiding of the gross receipts tax.

The input-output model provides state specific estimates of business-to-business purchases. This information is used to "push down" gross receipts taxes on business purchases by attributing the taxes to producing sectors according to their sales to businesses.

II. Input-Output

Define:

Y_i = the total value of output for industry sector i,
V_i = the total value added by industry i,
y_{ij} = the value of intermediate output purchased by industry i from industry j,
$\alpha_{ij} = y_{ij} / Y_j$, where $0 \leq \alpha_{ij} \leq 1$, and
t_i = the gross receipts tax rate for industry i, where $0 \leq t_i \leq 1$; t_i is calculated by dividing each sector's total tax payment by that sector's total tax base.

V_i, the value added by sector i, is the contribution to the output's final value and is comprised of employee compensation, proprietor income, other property income, and indirect business taxes (the last component refers to most non-income taxes).

An input-output representation of the economy may be expressed by

$$
\begin{aligned}
Y_1 &= y_{11} + y_{12} + \ldots + y_{1n} + V_1 \\
Y_2 &= y_{21} + y_{22} + \ldots + y_{2n} + V_2 \\
&\vdots \qquad\quad \vdots \qquad\quad \vdots \\
Y_n &= y_{n1} + y_{n2} + \ldots + y_{nn} + V_n \, .
\end{aligned} \tag{1}
$$

Or, more generally

$$
Y_i = V_i + \sum_j \alpha_{ij} Y_j \, . \tag{2}
$$

Note that household purchases and other components of final demand are not represented because gross receipts taxes are assumed to be paid by businesses.

Equation (1) can be solved for V_i and manipulated to derive a set of simultaneous linear equations. First, α_{ij} can be substituted for y_{ij} / Y_j using the fact that $y_{ii} = (y_{ii} / Y_i)Y_i$. After Y_i is factored from $(Y_i - \alpha_{ii}Y_i)$ in each row the system may be written

$$
\begin{aligned}
V_1 &= (1 - \alpha_{11})Y_1 - \alpha_{12}Y_2 - \ldots - \alpha_{1n}Y_n \\
V_2 &= - \alpha_{21}Y_1 + (1 - \alpha_{22})Y_2 - \ldots - \alpha_{2n}Y_n \\
&\vdots \quad\quad \vdots \quad\quad\quad \vdots \quad\quad\quad \vdots \\
V_n &= - \alpha_{n1}Y_1 - \alpha_{n2}Y_2 + \ldots + (1 - \alpha_{nn})Y_n \, .
\end{aligned} \tag{3}
$$

Or, in matrix form

$$
\begin{bmatrix} V_1 \\ V_2 \\ \vdots \\ V_n \end{bmatrix} = \begin{bmatrix} (1 - \alpha_{11}) & - \alpha_{12} & \ldots & - \alpha_{1n} \\ - \alpha_{21} & (1 - \alpha_{22}) & \ldots & - \alpha_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ - \alpha_{n1} & - \alpha_{n2} & \ldots & (1 - \alpha_{nn}) \end{bmatrix} \begin{bmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_n \end{bmatrix} . \tag{4}
$$

III. Gross Receipts Taxes

Calculated gross receipts tax rates, t_i , can be included in a similar fashion[1]. Hence equation (2) becomes

$$
\tilde{Y}_i = (1+t_i)\,(V_i + \sum_j \alpha_{ij}\tilde{Y}_j) \tag{5}
$$

where $\tilde{Y}_i$ = the value of industry i output, now explicitly including pyramided gross receipts taxes with rates of t_i. This system can likewise be written in matrix form similar to equation (4), as shown in equation (6) below.

[1] It is assumed that the original input-output data includes no gross receipts taxes. Alternatively, it can be assumed that we are modeling an incremental change in gross receipt tax rates. Tax rates are calculated with actual DOR collections and tax base for each sector.

(6)

$$\begin{bmatrix} [1 - \alpha_{11}\ (1 + t_1)] & -(1 + t_1)\,\alpha_{12} & \dots & -(1 + t_1)\,\alpha_{1n} \\ -(1 + t_2)\,\alpha_{21} & [1 - \alpha_{22}\ (1 + t_2)] & \dots & -(1 + t_2)\,\alpha_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ -(1 + t_n)\,\alpha_{n1} & -(1 + t_n)\,\alpha_{n2} & \dots & [1 - \alpha_{nn}\ (1 + t_n)] \end{bmatrix} \begin{bmatrix} \tilde{Y}_1 \\ \tilde{Y}_2 \\ \vdots \\ \tilde{Y}_n \end{bmatrix} = \begin{bmatrix} (1 + t_1)\,V_1 \\ (1 + t_2)\,V_2 \\ \vdots \\ (1 + t_n)\,V_n \end{bmatrix}$$

call this matrix **A** .

To solve for output with gross receipts taxes, $\tilde{Y}_i$, take the inverse of matrix **A**

(7)
$$\begin{bmatrix} \tilde{Y}_1 \\ \tilde{Y}_2 \\ \vdots \\ \tilde{Y}_n \end{bmatrix} = \mathbf{A}^{-1} \begin{bmatrix} (1 + t_1)\,V_1 \\ (1 + t_2)\,V_2 \\ \vdots \\ (1 + t_n)\,V_n \end{bmatrix} .$$

IV. The Effective Tax Rate on Value Added

The effective tax rate on value added can be thought of as the incremental difference in the value of output when gross receipts taxes are added to the system, as related to value added. For industry i the effective tax rate on value added can be defined as

(8) $$\tau_i = (\tilde{Y}_i - Y_i) / V_i .$$

Table 1 presents τ_i , the effective tax rate on value added, for the 37 industry groupings that comprise the productive sectors (the "non-productive" sectors, such as general government and households, have no value added).

Also shown in Table 1 are:

t_i , the gross receipts tax rate calculated with actual tax collections and tax base,
V_i , value added,
Y_i , the original output vector, and
$\tilde{Y}_i$, industry output including pyramided gross receipts taxes.

Table 1 shows τ_i , the effective tax rate on value added, immediately following the four columns listed above. For Washington State as a whole, the effective tax rate on value added is shown to be 1.53 percent.

V. Pyramiding of the Gross Receipts Tax

Pyramiding of the gross receipts tax can be measured by dividing the effective tax rate on value added, τ_i , by the rate calculated with actual collections and tax base, t_i , or

(9) The Degree of Pyramiding = τ_i / t_i .

The degree of pyramiding for each industry is presented in the last column in Table 1, from greatest to least. The measured degree of pyramiding statewide is 2.5. This is similar to other, back-of-the-envelope, DOR calculations for gross receipts tax pyramiding.

IV. Data Sources

Tax data is from Washington State Department of Revenue sources. Implan input-output data is from the 1998 Washington State Implan model from Minnesota Implan Group, Inc.

Table 1
Effective Tax Rate on Value Added
Listed by Degree of Pyramiding

	t_i	V_i	Y_i $Millions	$\tilde{Y}_i$	Effective Tax Rate On Value Added	Degree of Pyramiding
4 MFG FOOD 20	0.30%	2,506	5,814	5,864	2.03%	**6.7**
11 MFG PETROLEUM REFINING 29	0.46%	430	1,116	1,130	3.06%	**6.7**
19 MFG AIRCRAFT & PARTS 372	0.50%	8,002	18,779	18,989	2.63%	**5.3**
12 MFG RUBBER & PLASTICS 30	0.47%	458	917	927	2.03%	**4.3**
15 MFG PRIMARY METAL 33	0.48%	883	1,705	1,723	2.00%	**4.1**
5 MFG APPAREL & TEXTILES 22-23	0.47%	324	636	642	1.95%	**4.1**
6 MFG LUMBER & WOOD PROD 24	0.48%	2,688	5,293	5,345	1.92%	**4.0**
21 MFG PROF & SCIENTFC INSTR 38	0.46%	1,004	1,918	1,936	1.83%	**4.0**
17 MFG IND/COMM/COMP M&E 35	0.49%	1,626	3,199	3,230	1.90%	**3.9**
7 MFG FURN & FIXTURES 25	0.47%	212	398	402	1.76%	**3.7**
20 MFG OTHER TRANS EQUIP 37	0.50%	854	1,650	1,666	1.85%	**3.7**
8 MFG PAPER PROD 26	0.45%	1,490	2,648	2,673	1.66%	**3.7**
14 MFG STONE/CLAY/GLASS 32	0.46%	675	1,128	1,139	1.59%	**3.4**
10 MFG CHEMICAL PROD 28	0.47%	842	1,413	1,426	1.54%	**3.3**
3 CONSTRUCTION 15-17	0.48%	11,063	19,074	19,249	1.59%	**3.3**
18 MFG ELECT M&E (NOT COMP) 36	0.49%	1,429	2,295	2,314	1.38%	**2.8**
13 MFG LEATHER ETC 31	0.51%	21	34	34	1.42%	**2.8**
35 MOVIES/AMUSE/REC 78-79	0.82%	1,700	2,835	2,873	2.25%	**2.7**
34 SVC MISC REPAIR 76	0.51%	557	859	866	1.35%	**2.7**
22 MFG MISC MFG IND 39	0.44%	575	862	869	1.16%	**2.7**
9 MFG PRINT & PUBLISHING 27	0.52%	1,340	2,039	2,057	1.35%	**2.6**
23 TRANSPORTATION ETC 40-47	0.74%	6,051	9,583	9,694	1.84%	**2.5**
2 MINING/QUARRY 10-14	0.49%	420	600	605	1.17%	**2.4**
16 MFG FABRICATED METAL 34	0.47%	1,031	1,436	1,447	1.08%	**2.3**
29 SVC LODGING 70	0.49%	1,166	1,543	1,556	1.08%	**2.2**
30 SVC PERSONAL 72	0.95%	1,107	1,638	1,660	2.04%	**2.1**
1 AG FOR FISHING 1-9	0.69%	4,847	6,764	6,831	1.39%	**2.0**
33 SVC AUTO REPAIR,SERV 75	0.49%	1,732	2,245	2,261	0.96%	**2.0**
24 COMMUNICATIONS 48	0.61%	5,608	7,455	7,521	1.18%	**1.9**
26 WHOLESALE TRADE 50-51	0.46%	13,090	16,556	16,673	0.89%	**1.9**
37 LEGAL/ENG/ACCT 81-89	1.14%	9,966	13,817	14,023	2.07%	**1.8**
32 SVC BUSINESS 73	0.95%	3,487	4,516	4,571	1.58%	**1.7**
27 RETAIL TRADE 52-59	0.47%	17,614	20,535	20,668	0.75%	**1.6**
36 SVC MEDICAL & HEALTH 80	1.25%	9,801	12,563	12,755	1.95%	**1.6**
28 FIRE 60-67	0.95%	31,021	38,511	38,969	1.48%	**1.6**
25 ELECTRIC,GAS&OTHER UTIL 49	2.14%	2,852	3,716	3,808	3.22%	**1.5**
31 SVC COMP/DATA/PROC 737	0.91%	10,510	12,313	12,445	1.26%	**1.4**
Total State	0.61%	158,980	228,401	230,841	**1.53%**	**2.5**

Notes:

$\tilde{Y}_i$ = industry output including pyramided gross receipts taxes, calculated here.

Y_i = the original industry output vector, from the WA State Implan model.

V_i = value added, from the WA Implan model.

t_i = gross receipts tax rates calculated with actual DOR tax collections and tax base.

The estimated degree of pyramiding is the effective tax on value added divided by t_i .

Appendix C-13

HYPOTHETICAL FIRM ANALYSIS

Tax Rankings for the Warehouse and Distribution Industry

The following information is derived from the *Warehouse and Distribution Study*, Washington State Department of Revenue Research Division, December 1996. Each warehouse is assumed to be new in the first of the ten analysis years. All of the firms in this example are assumed to export 80 percent of their goods. For each of the warehouses, essentially only the warehouse activity is taxed. Taxes that are related to other aspects of the firm's operations are not directly included in this analysis. However, in income tax states, the change in the firm's income tax liability caused by the increase in in-state property and payroll is included in the total tax liability.

The analysis of Washington taxes is updated to include major tax changes since 1996, including repeal of the motor vehicle excise tax.

Industries included:

- Third party warehouse
- Warehouse owned by a wholesaler
- Warehouse which is a fully owned subsidiary of a large regional retail distributor

Comparative states: 8, including Washington:

- Oregon
- Idaho
- California
- Nevada
- Louisiana
- Texas
- Utah
- WASHINGTON

Taxes included:

- Gross Receipts
- State Income Tax
- Unemployment Insurance
- Industrial Insurance
- State and Local Property Tax
- State and Local Sales and Use Tax
- Motor Vehicle Excise Tax on Trucks

Table 1

Washington's Tax Burden Rank Out of Eight States
Based on 10-year Net Present Value (NPV) Taxes for Hypothetical Warehouse and Distribution Firms
Rank 1=Lowest Tax, Rank 8=Highest Tax

Industry	Washington Tax Rank (out of 8 states)
Third Party Warehouse	2
Wholesaler	3
Large Retailer	2

Tax Rankings for Other Washington Industries with Competitors in Other States

The following information comes from the study, *Tax Incentive Comparison of Six States and One Province*, by the Washington State Department of Revenue Research Division, 1999. Net present value is calculated for firms over a period of 20 years.

Industries included:

- Semiconductor Manufacturer
- Biotech Integrated
- Biotech R&D Only
- Small Software Originator
- High Tech Call Center

Comparative states: 7, including Washington

- Arizona
- British Columbia
- California
- New Mexico
- Oregon
- Utah
- WASHINGTON

Taxes included:

- Gross Receipts
- State Income Tax
- Unemployment Insurance
- Industrial Insurance
- State and Local Property Tax
- State and Local Sales and Use Tax

Table 2

Washington's Tax Burden Rank Out of Seven States
Based on 20-year NPV Tax Burdens for
Hypothetical Manufacturing Firms
1 = Lowest tax; 7= Highest tax

Industry	Washington Tax Rank (out of 7 states)
Semiconductor Manufacturer	2
Biotech, Integrated	2
Biotech, R&D only	6
Software Originators	3
High Tech Call Center	4

Appendix C-14

COMPARISON OF PROFIT MARGINS OF HYPOTHETICAL FIRMS
10-year average NPV profit margins under Washington's tax system
(In parentheses are the lowest tax state and the highest tax state.)

Industry and firm type	Profit margin with WA taxes	Highest profit margin (State)	Lowest profit margin (State)
Food Processing:			
New	3.50%	3.51% (N. Carolina)	2.14% (Florida)
Established	1.14%	1.72% (Alabama)	0.91% (Florida)
Lumber and Wood Products:			
New	1.23%	2.44% (N. Carolina)	-2.24% (Colorado)
Established	2.60%	3.29% (N. Carolina)	0.81% (Colorado)
Paper Products:			
New	1.48%	2.26% (N. Carolina)	0.44% (Texas)
Established	2.40%	3.00% (N. Carolina)	2.02% (Montana)
Printing/Publishing:			
New	4.35%	4.83% (N. Carolina)	2.38% (Texas
Established	14.60%	14.60% (Washington)	12.46%(California)
Petroleum Products:			
New	-1.34%	-0.70% (N. Carolina)	-3.30% (Florida)
Established	0.51%	1.27% (N. Carolina)	0.51% (Washington)
Primary Metals:			
New	-2.61%	-1.51% (N. Carolina)	-5.39% (Florida)
Established	0.32%	1.86% (Alabama)	-0.49% (Texas)
Electrical Equipment:			
New	-4.15%	-3.28% (N. Carolina)	-4.79% (Minn.)
Established	6.45%	7.05% (N. Carolina)	5.66% (Minn.)
Aircraft and Parts:			
New	1.97%	2.59% (N. Carolina)	0.27% (Montana)
Established	4.93%	5.33% (N. Carolina)	4.32% (Minn.)
Instruments:			
New	1.06%	1.68% (N. Carolina)	0.72% (Florida)
Established	6.89%	7.38% (Alabama)	5.67% (Montana)
Computer Software:			
New	7.69%	7.78% (N. Carolina)	7.00% (California)
Established	3.20%	3.40% (N. Carolina)	2.84% (Florida)

Appendix C-15

FACTORS THAT INFLUENCE BUSINESS LOCATION

	Transportation & Infrastructure			*Other Factors that Government May Influence*						*Direct Governmental Factors*				*General*
	Transportation			TeleComm	Higher Ed	Skilled	Research	Technical	Land	K-12	Govt.	Regulation &	Public	Tax	Market
	Land	Water	Air	& Related	/ Univ.	Workers	Labs	Asstnce.	Availability	Expend	Subsidies	Permit Costs	Safety	Factors	Factors*
Ag/Forest/ Fish/Mine	**1**	**1**	**3**	**3**	**2**	**2**	**3**	**2**	**2**	**2**	**3**	**2**	**3**	**2**	**1***
Construction	**1**	**3**	**3**	**3**	**2**	**1**	**3**	**2**	**2**	**2**	**3**	**2**	**3**	**2**	**1***
Non-Durable Manufacturing	**1**	**3**	**2**	**3**	**2**	**2**	**3**	**2**	**1**	**2**	**3**	**2**	**3**	**2**	**1***
Durable Manufacturing	**1**	**3**	**3**	**3**	**2**	**2**	**2**	**2**	**1**	**2**	**3**	**2**	**3**	**2**	**1***
Aerospace	**1**	**3**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**3**	**2**	**3**	**2**	**1***
Computer Manf/Srvcs	**2**	**3**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**3**	**2**	**3**	**2**	**1***
BioTech	**2**	**3**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**3**	**2**	**3**	**2**	**1***
Health Services	**2**	**3**	**2**	**2**	**1**	**1**	**1**	**2**	**2**	**2**	**3**	**2**	**3**	**2**	**1***
Business Services	**2**	**3**	**1**	**2**	**1**	**1**	**3**	**2**	**2**	**2**	**3**	**2**	**3**	**2**	**1***
Transport/ Comm/Util	**1**	**3**	**1**	**1**	**1**	**1**	**3**	**2**	**1**	**2**	**3**	**2**	**3**	**2**	**1***
Wholesale	**1**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**1**	**2**	**3**	**2**	**3**	**2**	**1***
Retail	**1**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**1**	**2**	**3**	**2**	**3**	**2**	**1***
Financ/Insrn Real Estate	**2**	**3**	**1**	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**3**	**2**	**3**	**2**	**1***
All Other Services	**2**	**3**	**3**	**3**	**2**	**2**	**3**	**2**	**2**	**2**	**3**	**2**	**3**	**2**	**1***

Legend **1** = a fair amount of empirical evidence and a consensus concerning a factor's importance ***most important**

2 = a small amount of evidence, no clear consensus **3** = no real evidence

Appendix C-16

SHORT-RUN VOLATILITY OF TAXES AS MEASURED BY SHORT-RUN ELASTICITIES

Table 1

Estimates of Short-Run Elasticities

Tax Base	Short-Run Elasticity
Sales and Use	1.4
B&O	1.4
Property	0.2
Public Utilities	-0.2
All Taxes	1.2

The elasticities in Table 1 are estimated with respect to the business cycle that is represented by state personal income.

Table 2

Estimates of Short-Run Elasticities for Simulated Personal Income Tax (1980-2002)

Tax Base	Short-Run Elasticity
Flat personal income tax	2.0
Combination 2.3% personal income tax and 3.5% retail sales tax with food in base	1.2
Combination 2.6% personal income tax and 3.5% retail sales tax with food exempted	1.7

A history of Washington Adjusted Gross Income (AGI) was used to simulate a flat Washington personal income tax. Note that much of the volatility in AGI comes from capital gains. It is unknown whether the high growth in capital gains in the 1990s will be repeated in the future. Therefore, the historical estimates of simulated personal income tax may not be good indicators of future elasticities.

Question: Do Washington tax bases keep up with income during economic expansions or economic downturns?

Non-food retail sales and use elasticity is the most elastic (i.e. greater than 1.0) as is the B&O. The property and public utility elasticities are less elastic (i.e. less than 1.0). The weighted average short-run elasticity for all tax bases combined is 1.3 and suggests an income elastic

relationship. What this means is that in times of economic expansion, tax revenues increase faster than income; conversely, in economic downturns when income shrinks, tax revenues shrink even more.

Methodology:

A standard double log regression model was used to estimate the short-run income elasticities of the four tax bases reported in Table 1. The model is specified as follows (Holcombe and Sobel, 1993):

(1) $\text{Ln}(B_t) = \forall + \exists \ln(Y_t) + >_t$

Where B_t = the level of the tax base in time period t
Y_t = the level of personal income in period t
T_i where i=1970…….2000

Three transformations of the data in equation (1) were done before running the linear regression equations associated with each tax base. First, the nominal data in B (the tax base) and Y (personal income) were transformed to real variables using the implicit price deflator for consumer expenditures. The logs of the real variables were then taken. And, since time series data was used, the upward trend inherent in time series data was removed by taking first differences of the real variables. The transformed model becomes the following:

(2) $)\ln(B_t) = \forall + \exists)\ln(Y_t) + >_t$

The ∃ coefficients from equation 2 yield the elasticities for each of the tax bases under consideration.

Data Sources:
A constant base series covering the time period from 1970 to 2000 was used. The data were deflated using the implicit price deflator of consumer expenditures.

Reference:
Holcombe, Randall and Russell Sobel, *Growth and Variability in State Tax Revenue: An Anatomy of State Fiscal Crises*, Greenwood Press, Westport, CT, 1993, pp. 73-96.

Appendix C-17

TIME SPENT PREPARING AND FILING TAX RETURNS

Table 1

Percentage of Taxpayers that Collect and Organize Information Solely for the Combined Excise Tax Return (CETR) or for Other Reasons

	Determination of Gross Income by Tax Classification	Deduction Information	Local Retail Sales Tax Coding Information
Collect for CETR only	30.7%	36.1%	64.3%
Collect for other purposes but collect more for CETR	40.3%	26.9%	14.1%
Collect mostly for other purposes	22.4%	11.1%	1.3%
Not applicable	6.5%	25.8%	20.3%

Table 2

Hours Spent Per Reporting Period Collecting and Organizing Data, and Filling Out and Filing the CETR

Type of taxpayer	Time spent collecting and organizing data	Time spent filling out and filing CETR
Monthly	6.6 hours	4.6 hours
Quarterly	6.5 hours	3.8 hours
Annual	7.6 hours	3.6 hours

Appendix C-18

DEPARTMENT OF REVENUE COLLECTION COST BY REVENUE SOURCE – 1996

STATE TAXES	COST PER $100 COLLECTED
Retail Sales	$0.27
Use	3.06
Business and Occupation	0.75
Public Utility	1.18
Cigarette	0.28
Liquor Sales	0.03
State Property	*
Timber Excise	6.46
PUD Privilege	0.15
Leasehold Excise	3.60
Estate	0.44
Tobacco Products	2.14
Litter	12.94
Real Estate Excise	0.18
Convention Center	2.01
Hazardous Substance	4.26
Refuse Collection	2.22
Wood Stove Fee	61.22
Refuse Collection	34.23
Carbonated Beverage Syrup	3.01
Brokered Natural Gas	2.15
Oil Spill	2.94
Rental Car	2.25
State Taxes Subtotal	$0.63
LOCAL TAXES	
Sales & Use	$0.76
Transit	0.55
Criminal Justice	*0.95*
Public Facilities	6.83
Hotel/Motel	3.81
Juvenile Correctional Facilities	14.42
Rental Car - Stadium	28.25
King Co Food & Beverage	16.85
Stadium Taxes	71.86
Local Rental Car	15.59
Combined Local Excise Tax Subtotal	$1.06
TOTAL	**$0.70**

**Property taxes are collected by the county treasurers and administered by both the Department of Revenue and the county assessors.*

Appendix C-19

RETAILERS' COSTS OF COLLECTING AND REMITTING WASHINGTON STATE SALES TAX

Summary of All Costs

As a percent of total state and local sales tax collections

	Small	Medium	Large	Total, weighted by number	Total, weighted by dollars
Additional clerk/cashier hours	--	--	--	--	--
Additional/ more complex POS* equipment	1.59%	--	--	0.69%	0.06%
Additional customer service	0.15%	0.18%	0.006%	0.13%	0.03%
Additional training	--	--	--	--	--
POS rate and base changes	0.32%	0.72%	0.07%	0.42%	0.14%
Credit and debit card fees	0.89%	0.74%	0.76%	0.81%	0.76%
Total audit costs	0.012%	0.041%	0.001%	0.021%	0.006%
Storage cost	0.03%	0.02%	0.003%	0.02%	0.006%
Appeals cost	--	0.001%	0.0001%	0.0004%	0.0002%
Total cost of filing tax return	3.27%	1.35%	0.08%	1.94%	0.34%
Cost of mistakes	0.17%	0.30%	0.05%	0.20%	0.08%
Total Costs	**6.47%**	**3.35%**	**0.97%**	**4.23%**	**1.42%**
Float	0.51%	0.40%	0.40%	0.45%	0.40%
Lower B&O	0.18%	0.20%	0.23%	0.20%	0.22%
Total Benefits	**0.69%**	**0.60%**	**0.63%**	**0.65%**	**0.62%**

Table entries with no cost indicate that costs are less than 1/1,000th of a percent.

*Point of Sale

Appendix C-20

NONTRANSPARENT TAXES

Tax	Comment
Business and Occupation	The tax is paid by the business selling the good or service and may or may not be included in the purchase price. If it is passed along it is most often not itemized and therefore is not visible to the consumer.
Cigarette	The tax is imposed at the wholesale level when the stamps are purchased/applied and becomes a part of the price of the cigarettes. The amount of the cigarette tax is not apparent to the retail consumer.
Tobacco Products	The tax is paid at the wholesale level and becomes part of the retail price, not visible to the retail purchaser.
Liquor Sales	The tax is applied to the wholesale price plus markup by the Liquor Control Board (LCB). It becomes part of the retail price of the liquor and is not visible to the retail purchaser, either on purchases from the Board or from restaurants/bars.
Liquor Liter	Same comment as for Liquor Sales Tax. The tax is based on volume, not price.
Wine	Paid by manufacturers of wine sold to wholesalers, the LCB, or directly to consumers by the wineries. This volume tax is built into the price and is not visible to retail consumers.
Beer	Paid by manufacturers, on a per 32 gallon barrel basis. It is built into the price of beer and is not visible to the retail consumer.
Fuel	Paid by refiners, importers and blenders of fuel delivered to wholesalers at the terminal rack. Built into the price to the ultimate consumer and is not visible.
Local Hotel/Motel Taxes	These taxes are a credit against the state sales tax and do not increase the charge to the user of hotel/motel rooms.
Insurance Premiums	Paid by insurers and built into the cost of insurance products.
Hazardous Substance	Paid by the first (business) possessor of the hazardous substance in Washington. Built into the price of products subsequently sold and not visible to the retail purchaser.
Soft Drinks (syrup)	Collected from wholesalers or retailers of syrup used to make carbonated beverages, based on volume. The tax is built into the price of the syrup. It is not visible in the retail price of carbonated beverages, either in bottled or drink form.
Oil Spill	Paid by the owner of crude oil or petroleum products transported into Washington via ship or barge, on a gallonage basis. The tax is passed on to the ultimate consumer of the refined products and is not visible.
Local Gambling	Paid by operators of gambling establishments (card rooms, pull tabs, etc.) and built into cost of playing.
Property	Although the tax is visible to owners of property, it is not visible to renters but is often passed along to renters as part of their rental charge.

Tax	Comment
Timber	Paid by the owner of the timber once harvested and built into the cost of the timber products sold. The tax is not visible to the ultimate purchaser of timber products.
Public Utility District Privilege	Paid by districts that generate or distribute power. The tax is built into the price of the power sold to ultimate consumers.
Real Estate Excise	Paid by sellers of real property but routinely passed on to purchasers as a non-visible part of the selling price.

Appendix C-21

TAX ELASTICITY ESTIMATES

1. SUMMARY

An adequate tax system is generally considered to be one in which tax revenues keep up with the growth of the economy as measured by the change in personal income. This implies that an adequate tax system has a tax elasticity of 1.0, the tax elasticity being defined as the percentage change in taxes divided by the percentage change in personal income. The Office of Financial Management estimated that between 1971 and 2001 the Washington State government tax elasticity with respect to personal income was 0.94. Based on an analysis of taxable retail sales covering 1982 to 1995, Kriss Sjoblom of the Washington Research Council suggested that the current elasticity might be closer to 1.0.

Using econometric models designed to forecast tax revenue, this study also attempts to estimate the state tax elasticity. Like the Sjoblom analysis, it is restricted to taxable retail sales (the tax base for retail sales taxes).

Of the 20 equations estimated during this study, five representative equations are presented here for discussion. The economic variables used to predict taxable retail sales, which have been adjusted to eliminate the effects of changes in the tax base, include personal income, the unemployment rate, and housing permits. Since each equation is expressed in logarithmic form, its regression coefficients are direct estimates of tax elasticities with respect to the explanatory variables (personal income, the unemployment rate, and housing permits).

Equation 1 has an estimated tax elasticity with respect to personal income (also called the income elasticity) of 0.880. This means that a 1 percent increase in personal income is expected to lead to a 0.880 percent increase in taxable retail sales (and by implication retail sales taxes), all else (namely, the unemployment rate and housing permits) being equal. The estimates of the income elasticities range from 0.863 (Equation 5) to 1.005 (Equation 2, which is a replication of Sjoblom's model).

In an exercise to forecast taxable retail sales from FY 2001 to FY 2005 based on the September 2002 Washington economic outlook prepared by the Office of the Forecast Council (OFC), four of the five equations predict weak growth. Their effective income elasticities, defined as the predicted percentage change in taxable retail sales divided by the predicted percentage change in personal income, are all less than the income elasticities obtained directly from the forecasting equations. The estimates of the effective elasticities range from 0.673 (Equation 5) to 1.005 (Equation 2). Note that the forecasts of taxable retail sales are influenced not only by the change in personal income but also by the changes in the unemployment rate and personal income. As a consequence, the so-called *ceteris paribus* assumption does not hold for the effective elasticities. Because personal income is the only explanatory variable in Equation 2, its effective elasticity does equal the elasticity in the forecasting equation.

When comparing these predictions with the OFC tax revenue forecasts made in September 2002, two observations are noteworthy. First, the OFC's forecast change for retail sales taxes between FY 2001 and FY 2005 (13.0 percent) is virtually the same as Equation 1's forecast change for taxable retail sales (12.8 percent), suggesting that the two models are similar. Second, the OFC outlook for tax collections is also bleak, even relative to the expected slow growth of personal income. The effective income elasticity for all taxes (retail sales, business and occupation, property, and other taxes) is expected to be only 0.767.

Tax collections are not only determined by the responsiveness of taxes to economic activity, such as consumer spending and new construction, but also by limits imposed by law. The initiative that has the greatest potential impact on state government, if it were strictly enforced, is Initiative 601. Although its objective of keeping real government spending per person constant does not seem unreasonable, strict adherence to I-601 would severely limit expenditures, as shown by an analysis of how I-601 would have worked in the 1990s. Contrary to the intention, real state government spending per capita under I-601 would have declined by at least 4 percent during the 1990s due to the high rate of inflation for many government services (e.g., prisons and health care). Relative to personal income, state government spending would have fallen by about 20 percent. Thus, if other states had increased their government expenditures along with personal income, as they appeared to have done, Washington State government spending per capita would have dropped by more than 20 percent relative to that of other states during the 1990s. This would have meant that by 2000, on a per capita basis, Washington would have had 20 percent less money for schools, roads, and other things than other states.

Although the findings do not rule out the possibility that the current tax elasticity with respect to personal income elasticity is 1.0, the weight of the evidence suggests that it is closer to 0.9. There is no evidence that it is greater than 1.0. The implication of this finding is that it is unlikely that under the current tax system future state tax revenue will keep pace with the growth of personal income without changes to the state tax base or tax rates.

2. INTRODUCTION

Adequacy refers to the ability of a tax system to generate tax revenues that keep up with the growth of the economy. Between 1980 and 2000, state and local government taxes in the United States grew at the same rate as personal income. If the norm is considered desirable, this implies that an adequate tax system has a tax elasticity of 1.0, the tax elasticity being defined as the percentage change in taxes divided by the percentage change in personal income.

Based on an analysis of personal income and state tax growth since 1971, the Office of Financial Management concluded that, without changes in either the tax base or tax rates, Washington tax revenue would have not kept pace with state personal income. Between 1971 and 2001, personal income grew at an 8.8 percent annual rate, while tax revenue, adjusted to remove the effects of changes in the tax base and tax rates, expanded at only an 8.3 percent rate, implying a tax elasticity of 0.94 (=8.3/8.8).

Kriss Sjoblom of the Washington Research Council, investigating the years between 1982 and 1995, found that retail sales taxes, which account for more than one-half of the total state tax

revenue, grew along with personal income during that period, suggesting that the current tax elasticity might be closer to 1.0. He restricted his study to those particular years because he felt that retail sales tax collections were abnormal before 1982 due to the tax boom caused by the construction of the Washington Public Power Supply System (WPPSS) nuclear power plants and after 1995 due to the phenomenal growth of stock option income.

Like the previous analyses, this study attempts to estimate the state tax elasticity. In this case, however, the estimates are derived from econometric models designed to forecast tax revenue. Given the lack of time, this study is restricted to taxable retail sales (the tax base for retail sales taxes).

3. ESTIMATING ELASTICITIES

The Office of the Forecast Council, which is responsible for predicting state tax revenues, provided the necessary data to estimate various models of Washington taxable retail sales. The data series run from the first quarter of 1969 to the last quarter of 2001.

Taxable retail sales have been adjusted to eliminate the effects of changes to the tax base, yielding a so-called constant-base series. Following the formulation of models constructed by the author to forecast Puget Sound and King County taxable retail sales, the economic variables used to predict Washington taxable retail sales include state personal income, the unemployment rate, and housing permits.

Since each forecasting equation is expressed in logarithmic form, its regression coefficients are direct estimates of the tax elasticities with respect to the explanatory variables (personal income, the unemployment rate, and housing permits). Each equation also includes an autoregressive term (AR) to obtain efficient estimates of the regression coefficients.

Of the 20 equations estimated during this study, five representative equations are presented for discussion. The five regression equations are shown in Section 5 and their respective income elasticities (i.e., their tax elasticities with respect to personal income, which are also called income elasticities) are reported in Table 1. Equation 1 has an estimated income elasticity of 0.880, which means that a 1 percent increase in personal income is expected to lead to a 0.880 percent increase in taxable retail sales (and by implication a 0.880 percent increase in retail sales taxes), all else (namely, the unemployment rate and housing permits) being equal.

The equations are also used to produce forecasts of taxable retail sales through the fourth quarter of 2005. These projections are based on the September 2002 economic outlook for the state developed by the OFC. Table 2 shows the forecast of the total percentage change in taxable retail sales and personal income between FY 2001 and FY 2005 for each equation. Also shown is the effective income elasticity, which is simply the ratio of the percentage change in taxable retail sales to the percentage change in personal income. The effective income elasticity in Table 2 differs from the income elasticity in Table 1 in that the change in taxable retail sales is now also affected by changes in the unemployment rate and housing permits. In other words, the so-called *ceteris paribus* assumption does not hold in the case of the effective income elasticity.

For purposes of comparison, Table 3 presents the FY 2001-05 forecasts of retail sales taxes and other taxes made by the OFC along with estimates of the corresponding effective income elasticities.

Since an analysis of adequacy is incomplete without some discussion of tax and spending limits, Table 4 shows the impact that Initiative 601 would have had on state spending (and presumably state taxes) had it been in effect and strictly enforced between 1990 and 2000. By limiting the growth of spending to population growth and the inflation rate (as measured by the U.S. personal consumption implicit price deflator), the intent of I-601 was to keep real state government spending per person constant.

4. OBSERVATIONS

Following are observations based on the findings of the analysis:

1. Equation 1. As previously noted, this equation follows the specification of a model constructed to forecast taxable retail sales in Puget Sound and King County. The model includes explanatory variables to predict the trend growth in taxable retail sales (personal income) as well as the cyclical fluctuations (the unemployment rate and housing permits). As expected, the estimated equation shows that taxable retail sales are positively related to personal income and housing permits and negatively related to the unemployment rate. In general, the equation is statistically strong, as indicated by its high R-squared (close to 1), its low standard error of the regression (0.016), the high t-values of its regression coefficients (all greater than 2 in absolute terms), and a good Durbin-Watson statistic (close to 2).

   Estimated with quarterly data from the second quarter of 1969 (1969.2) through the fourth quarter of 2001 (2001.4), Equation 1 gives an income elasticity estimate of 0.880 (the value of the regression coefficient for personal income), as reported in Table 1. According to the standard error of the regression coefficient (0.032), the income elasticity could be as high as 0.944 or as low as 0.816 (the 95 percent or two standard deviation confidence interval). In any case, the equation supports the notion that in the long run taxable retail sales and retail sales taxes do not keep up with the economy as measured by the growth in personal income.

Table 1

Taxable Retail Sales Elasticity Estimates

Equation	Sample Period	Income Elasticity
1	1969.2-01.4	0.880
2	1982.1-95.4	1.005
3	1982.1-95.4	0.977
4	1969.2-01.4	0.897*
5	1970.2-01.4	0.863*

*Adjusted for stock option income.

2. Equations 2 and 3. Equation 2 replicates the model of Kriss Sjoblom. Estimating an equation with data from 1982.1 to 1995.4 and including personal income as the sole explanatory variable yields an elasticity estimate of 1.005, which is virtually the same as Sjoblom's estimate (1.002).

   As shown in Equation 3, when the cyclical variables are added to the model, the elasticity estimate declines to 0.977, indicating that the cyclical forces operating during the period had the effect of making the income elasticity appear to be higher. It should be pointed out, however, that with an absolute t-value of less than two, neither the unemployment rate nor housing permits is considered to be a statistically significant variable in this equation.

3. Equation 4. Sjoblom's argument to disregard the years after 1995 (the growth of stock option income distorted the relationship between retail sales taxes and personal income) seems more reasonable than the one to disregard the years before 1982 (retail sales taxes were greatly boosted by the impact of the construction of five nuclear power plants), since there was much more to the economic boom in the 1970s than the WPPSS projects. At its height in 1999, stock option income in the software industry (principally Microsoft) accounted for about 5 percent of Washington personal income. Since much of stock option income is either taxed or saved, it tends to have a much smaller impact on consumer spending than normal wage and salary income. Thus, when stock option income is a significant portion of personal income, as it was in the late 1990s, it lowers the retail sales-personal income ratio, all else being equal.

   Equation 4, which is estimated with data from 1969.2 to 2001.4, attempts to address the stock option problem directly. Assuming that each dollar of stock option income has the equivalent effect on retail spending of only 30 cents of other personal income, a new income variable (called adjusted income), which takes into account the differential spending effects of the two types of income, is introduced into the taxable retail sales equation. See Equation 4 in Section 5 for more details. Note that software wages and salaries are used as a surrogate for stock option income in this equation.

The estimated elasticity of taxable retail sales with respect to adjusted personal income is 0.897. As expected, it is somewhat higher than the income elasticity obtained in Equation 1, indicating that stock option income does have the effect of reducing the retail sales-personal income ratio, imparting a downward bias to the income elasticity estimate.

4. Equation 5. Equation 5 is the same as Equation 4 except that it does not assume that the impact of the explanatory variables on the predicted variable is immediate. In particular, it assumes that the effects of changes in personal income and housing permits on taxable retail sales take four quarters before they are fully felt.

   This more complicated equation is interesting because, statistically speaking, it is the strongest of the five equations and, with a value of 0.863 (the sum of the lagged regression coefficients), it yields the lowest income elasticity estimate.

5. Forecasts and effective elasticities. Table 2 shows projections of taxable retail sales from each of the five equations. The forecasts of personal income, the unemployment rate, and housing permits come from the September 2002 outlook for the Washington economy prepared by the OFC.

   Equation 1 predicts that taxable retail sales will increase a total of 12.8 percent between FY 2001 and FY 2005, considerably less than the expected 15.9 percent gain in personal income. The effective income elasticity is 0.805 (=12.8/15.9), which is less than the one measured by the equation (0.880). In this case, the estimate of the effective elasticity is significantly affected by changes in the unemployment rate and housing permits. Only in the case of Equation 2, where personal income is the sole explanatory variable, is the effective elasticity equal to the elasticity in the forecasting equation.

   With the exception of Equation 2, each equation predicts weak growth in taxable retail sales relative to the growth of personal income. With an effective elasticity of only 0.673, Equation 5 is the most pessimistic, predicting a 10.7 percent increase in taxable sales during the four-year period. The principal reason for the generally gloomy outlook for taxable retail sales is the severity of the current recession, which has added three percentage points to the unemployment rate, placing it among the highest in the nation, and has dropped housing permits by 20 percent.

Table 2

Taxable Retail Sales Forecast and Effective Elasticity Estimates
FY 2001-2005
(percent change)

Equation	Taxable Retail Sales	Personal Income	Effective Income Elasticity
1	12.8	15.9	0.805
2	16.0	15.9	1.005
3	15.0	15.9	0.943
4	13.8	15.9	0.868
5	10.7	15.9	0.673

6. Office of the Forecast Council Tax Projections. The September 2002 forecasts of retail sales taxes and other taxes by the OFC are reported in Table 3.

There are two noteworthy observations. First, the forecast change for retail sales taxes (13 percent) is virtually the same as Equation 1's forecast change for taxable retail sales (12.8 percent). This suggests that the two models are very similar, which would not be surprising, since both are estimated over the same period (or close to it) and have the same principal explanatory variables (e.g., personal income). Note that this analysis was conducted without specific knowledge of the formulation of the OFC model.

Second, the OFC outlook for tax collections between FY 2001 and FY 2005 is also bleak. Indeed, other taxes (business and occupations taxes, property taxes, and miscellaneous taxes) are expected to grow more slowly than retail sales taxes. The effective income elasticity for all taxes is expected to be only 0.767.

Table 3

Office of the Forecast Council FY 2001-2005
Tax Revenue Forecast, September 2002
(billions of dollars)

	FY 2001	FY 2005	Percent Change	Effective Income Elasticity
Retail sales taxes	5.503	6.219	13.0	0.818
Other taxes*	5.024	5.589	11.2	0.704
Total*	10.527	11.808	12.2	0.767
Personal income	189.149	219.266	15.9	---

*Includes property tax transfers to Student Achievement Account.

7. Tax and spending limits. Tax collections are not only determined by the responsiveness of taxes to economic activity, such as consumer spending and new construction, but also by limits imposed by law. In recent years, a number of initiatives (e.g., the elimination of the motor vehicle excise tax) have limited state government spending by reducing taxes paid by households and businesses.

The initiative that has the greatest potential impact on state government finances, if it were strictly enforced, is Initiative 601. Rather than restricting taxes, it imposes a limit on state spending. Under I-601 state spending is restricted to grow at a rate determined by the population growth rate and the inflation rate, as measured by the U.S. implicit price deflator for personal consumption expenditures. This implies that state spending per capita adjusted for inflation remains constant.

Although the objective of keeping real government spending per person constant does not seem unreasonable, strict adherence to I-601 could have undesirable consequences, as shown by an analysis of how I-601 would have worked in the 1990s. The middle part of Table 4 shows Washington population and the U.S. consumption price deflator for 1990 and 2000. Since population grew at a 1.9 percent annual rate and the implicit price deflator rose at a 2.3 percent rate, I-601 would have restricted the growth of state spending to 4.2 percent per year.

If one believes that the growth of government services (e.g., education, safety, and transportation infrastructure) should keep up with the growth of the economy, the initiative would have led to two undesirable outcomes. The first stems from the use of the U.S. implicit price deflator for personal consumption expenditures, which fails to recognize that the cost of many government services (e.g., prisons and health care) are rising faster than the cost of consumer goods and services and that Washington has a higher inflation rate than the nation, primarily because of the state's faster growth. This implies that, if I-601 had been in force in the 1990s, real government spending per capita would have actually declined. Not counting the effect of Washington's higher inflation rate, the rapid rise in the cost of government services (2.7 percent annually) would have resulted in a 4.1 percent decline in real government spending per capita over the course of the 1990s.

Since the growth restrictions imposed by I-601 fall short of the growth of personal income (and always will by an amount equal to the growth rate of real per capita income), state spending as a fraction of personal income would have declined sharply. Under I-601 state spending would have advanced at only a 4.2 percent annual rate in the 1990s, substantially less than the 6.7 percent growth rate for personal income. In 1990, state general fund expenditures amounted to 7 percent of Washington personal income. Restricted by I-601, it would have amounted to only 5.5 percent of personal income by 2000. If other states had increased their government spending along with personal income, as they appeared to have done, Washington State government spending per capita would have dropped by more than 20 percent relative to that of other states during the 1990s. This would have meant that by 2000, on a per capita basis, Washington would have had 20 percent less money for schools, roads, and other things than other states.

Table 4

Hypothetical Impact of Initiative 601
1990-2000

	1990	2000	Annual Percent Change
Personal income (bils. $)	98.143	186.863	6.7%
Population (thous.)	4,903.0	5,908.4	1.9
Consumption price deflator (96=1.000)	0.856	1.074	2.3
I-601 spending limit	---	---	4.2
State and local price deflator (96=1.000)	0.862	1.120	2.7

5. ESTIMATED EQUATIONS

Equation 1

Dependent Variable: LWTRSA
Method: Least Squares
Date: 10/07/02 Time: 11:17
Sample: 1969:2 2001:4
Included observations: 131
Convergence achieved after 8 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.507932	0.169562	32.48335	0.0000
LWYP	0.879546	0.032188	27.32534	0.0000
LWUNRT	-0.078444	0.024713	-3.174211	0.0019
LWHS	0.029520	0.010802	2.732669	0.0072
AR(1)	0.933309	0.034689	26.90482	0.0000

R-squared	0.999537	Mean dependent var	9.037695
Adjusted R-squared	0.999522	S.D. dependent var	0.749441
S.E. of regression	0.016377	Akaike info criterion	-5.348433
Sum squared resid	0.033795	Schwarz criterion	-5.238692
Log likelihood	355.3223	F-statistic	68026.53
Durbin-Watson stat	2.288630	Prob(F-statistic)	0.000000
Inverted AR Roots	.93		

WTRSA Washington taxable retail sales adjusted for tax base changes (mils. $ per quarter)
WYP Washington personal income (bils. $ per year)
WUNRT Washington unemployment rate (%)
WHS Washington housing permits (thous. per year)

LWTRSA=log(WTRSA)
LWYP=log(WYP)
LWUNRT=log(WUNRT)
LWHS=log(WHS)

AR(1) First-order autoregressive term (corrects for serial correlation)

Equation 2

Dependent Variable: LWTRSA
Method: Least Squares
Date: 10/07/02 Time: 11:22
Sample: 1982:1 1995:4
Included observations: 56
Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.885410	0.074778	65.33244	0.0000
LWYP	1.004712	0.016709	60.13127	0.0000
AR(1)	0.637516	0.101863	6.258562	0.0000

R-squared	0.998085	Mean dependent var	9.344369
Adjusted R-squared	0.998013	S.D. dependent var	0.298513
S.E. of regression	0.013307	Akaike info criterion	-5.748912
Sum squared resid	0.009386	Schwarz criterion	-5.640411
Log likelihood	163.9695	F-statistic	13811.47
Durbin-Watson stat	2.117270	Prob(F-statistic)	0.000000
Inverted AR Roots	.64		

Equation 3

Dependent Variable: LWTRSA
Method: Least Squares
Date: 10/07/02 Time: 11:24
Sample: 1982:1 1995:4
Included observations: 56
Convergence achieved after 6 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.980089	0.142431	34.96482	0.0000
LWYP	0.977285	0.020473	47.73417	0.0000
LWUNRT	-0.027708	0.025805	-1.073720	0.2880
LWHS	0.023076	0.013667	1.688446	0.0974
AR(1)	0.629749	0.100369	6.274324	0.0000

R-squared	0.998309	Mean dependent var	9.344369
Adjusted R-squared	0.998177	S.D. dependent var	0.298513
S.E. of regression	0.012746	Akaike info criterion	-5.802170
Sum squared resid	0.008285	Schwarz criterion	-5.621335
Log likelihood	167.4608	F-statistic	7529.262
Durbin-Watson stat	2.196957	Prob(F-statistic)	0.000000
Inverted AR Roots	.63		

Equation 4

Dependent Variable: LWTRSA
Method: Least Squares
Date: 10/07/02 Time: 11:25
Sample: 1969:2 2001:4
Included observations: 131
Convergence achieved after 8 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.447631	0.154158	35.33794	0.0000
LWYPA	0.896730	0.028782	31.15594	0.0000
LWUNRT	-0.079522	0.023923	-3.324028	0.0012
LWHS	0.028512	0.010473	2.722558	0.0074
AR(1)	0.931357	0.033742	27.60209	0.0000

R-squared	0.999566	Mean dependent var	9.037695
Adjusted R-squared	0.999552	S.D. dependent var	0.749441
S.E. of regression	0.015865	Akaike info criterion	-5.411951
Sum squared resid	0.031715	Schwarz criterion	-5.302211
Log likelihood	359.4828	F-statistic	72489.71
Durbin-Watson stat	2.227846	Prob(F-statistic)	0.000000
Inverted AR Roots	.93		

WYPA	Washington personal income adjusted for stock option income (bils. $ per year)
WYWSSFT	Washington software wages and salaries* (bils. $ per year)
WYPO	Washington other personal income (bils. $ per year)

WYPA=WYP-0.7(WYWSSFT)*
LWYPA=log(WYPA)

WYP=WYSSFT+WYPO
WYPA=0.3(WYWSSFT)+WYPO
WYPA=0.3(WYWSSFT)+WYP-WYWSSFT
WYPA=WYP-0.7(WYWSSFT)

*Software wages and salaries are used as a surrogate for stock option income.

Equation 5

Dependent Variable: LWTRSA
Method: Least Squares
Date: 10/07/02 Time: 11:27
Sample(adjusted): 1970:2 2001:4
Included observations: 127 after adjusting endpoints
Convergence achieved after 8 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.423635	0.179196	30.26652	0.0000
LWUNRT	-0.082008	0.025934	-3.162129	0.0020
PDL01	0.147972	0.004477	33.05413	0.0000
PDL02	0.014912	0.004445	3.354437	0.0011
AR(1)	0.917740	0.032655	28.10436	0.0000

R-squared	0.999561	Mean dependent var	9.080095
Adjusted R-squared	0.999546	S.D. dependent var	0.721207
S.E. of regression	0.015364	Akaike info criterion	-5.474941
Sum squared resid	0.028800	Schwarz criterion	-5.362965
Log likelihood	352.6588	F-statistic	69374.95
Durbin-Watson stat	2.092116	Prob(F-statistic)	0.000000

Inverted AR Roots .92

Lag Distribution of LWYPA	i	Coefficient	Std. Error	T-Statistic
. * |	0	0.12331	0.00373	33.0541
. * |	1	0.19730	0.00597	33.0541
. *|	2	0.22196	0.00671	33.0541
. * |	3	0.19730	0.00597	33.0541
. * |	4	0.12331	0.00373	33.0541
Sum of Lags		0.86317	0.02611	33.0541

Lag Distribution of LWHS	i	Coefficient	Std. Error	T-Statistic
. * |	0	0.01243	0.00370	3.35444
. * |	1	0.01988	0.00593	3.35444
. *|	2	0.02237	0.00667	3.35444
. * |	3	0.01988	0.00593	3.35444
. * |	4	0.01243	0.00370	3.35444
Sum of Lags		0.08699	0.02593	3.35444

Appendix C-22

STATE AND LOCAL GOVERNMENT FINANCES: IMPLICIT ELASTICITIES

By Dick Conway, Committee Member

An underlying presumption in evaluating Washington's tax structure is that the elasticity of tax revenue with respect to personal income should be one, meaning that tax revenue should grow at the same rate as personal income, at least in the long run. Thus, a tax system with an elasticity of less than one, such as that found in Washington, is viewed as deficient. But is one the most desirable value for the elasticity?

The objective of this exercise is to evaluate this presumption. However, rather than debating over "shoulds," an exercise involving value judgments, I have attempted to identify the norm with respect to the behavior of state and local government finances. Using data for 1980, 1990, and 2000 from the U.S. Bureau of Economic Analysis, I have calculated various current-dollar receipt and expenditure elasticities for all state and local governments in the United States (see Table 1). Note that this analysis does not adjust for changes in tax rates or tax bases. Furthermore, in an attempt to mitigate any effect that business cycles might have on state and local government finances, I have selected years that are all peak years.

Following are some observations:

1. If the norm were deemed desirable, the behavior of state and local government consumption expenditures and gross investment would be, at first blush, the best argument for an elasticity of one. As shown at the bottom of the table, consumption expenditures (operating expenditures on education, safety, and other government functions) and gross investment (expenditures on roads, computers, and other capital), which represent the public sector's contribution to Gross Domestic Product, have moved almost in lock-step with personal income. Not only is the expenditure elasticity very close to one (0.99) over the twenty-year period, it is also very stable over the two shorter periods (0.98 and 1.02, respectively). There is also very little difference between the longer-run consumption expenditure elasticity (1.00) and the gross investment elasticity (0.98).

2. Of course, this does not mean that the tax revenues needed to pay for these expenditures have necessarily kept up with personal income. My hunch is that every state has had to increase tax rates and broaden tax bases to satisfy the increasing demand for public services. Moreover, it would appear that this task was made more difficult in the 1990s because of the high inflation rate for state and local expenditures (2.7 percent per year) relative to household expenditures (2.3 percent).

Table 1

STATE AND LOCAL GOVERNMENT FINANCES
Billions of Dollars

				Average Annual Percent Change			Implicit Elasticity*		
	1980	1990	2000	1980-90	1990-00	1980-00	1980-90	1990-00	1980-00
Current receipts	316.6	663.4	1,222.6	7.7	6.3	7.0	0.99	1.16	1.06
Income taxes	42.6	107.7	219.8	9.7	7.4	8.6	1.25	1.36	1.30
Sales taxes	82.9	183.2	321.5	8.3	5.8	7.0	1.06	1.07	1.06
Property taxes	68.8	161.1	248.4	8.9	4.4	6.6	1.15	0.82	1.01
Other taxes and nontax receipts	50.0	100.0	187.3	7.2	6.5	6.8	0.93	1.19	1.04
Federal grants-in-aid	72.3	111.4	245.6	4.4	8.2	6.3	0.57	1.52	0.96
Current expenditures	307.8	660.8	1,189.8	7.9	6.1	7.0	1.02	1.12	1.06
Consumption expenditures	260.5	545.8	929.0	7.7	5.5	6.6	0.99	1.01	1.00
Transfer payments to persons	51.2	127.8	270.7	9.6	7.8	8.7	1.24	1.44	1.32
Other expenditures	-3.9	-12.8	-9.9	12.6	-2.5	4.8	1.63	-0.47	0.72
Current surplus or deficit	8.8	2.6	32.8	-11.5	28.9	6.8	-1.48	5.31	1.03
Current receipts less federal grants-in-aid	244.3	552.0	977.0	8.5	5.9	7.2	1.10	1.08	1.09
Income, sales, and property taxes	194.3	452.0	789.7	8.8	5.7	7.3	1.14	1.06	1.10
Other taxes and nontax receipts	50.0	100.0	187.3	7.2	6.5	6.8	0.93	1.19	1.04
Consumption expenditures and gross investment	324.4	673.0	1,150.8	7.6	5.5	6.5	0.98	1.02	0.99
Consumption expenditures	260.5	545.8	929.0	7.7	5.5	6.6	0.99	1.01	1.00
Gross investment	63.9	127.2	221.8	7.1	5.7	6.4	0.92	1.05	0.98
Personal income	2,323.9	4,903.2	8,319.2	7.8	5.4	6.6	na	na	na
State and local government expenditures deflator (1996=1.000)	na	0.862	1.121	na	2.7	na	na	na	na
Personal consumption expenditures deflator (1996=1.000)	0.552	0.856	1.075	4.5	2.3	3.4	na	na	na

*Growth rate relative to personal income growth rate.

3. The answer to the elasticity question is somewhat different when transfer payments to persons are taken into account. In addition to running schools and building roads, state and local governments make payments to people in the form of unemployment compensation, food stamps, public assistance, and disability income. With a twenty-year elasticity of 1.32, transfer payments have constituted the fastest growing category of state and local government expenditures. This has meant that state and local government current expenditures (which include transfer payments but exclude investment) have risen faster than personal income over the past twenty years, as evident by an elasticity of 1.06. Current expenditures grew even faster on a relative basis in the 1990s, yielding an implicit elasticity of 1.12.

4. State and local government funds are supplemented by federal grants-in-aid. But, with an implicit elasticity of 0.96, grants-in-aid did not keep pace with state and local spending between 1980 and 2000. As indicated by the large changes in the elasticity, the growth of grants-in-aid was also volatile, expanding very slowly during the Reagan years (0.57) and very rapidly during the Clinton years (1.52).

5. The relatively slow growth of federal grants-in-aid in the long run has meant that state and local governments have had to increase their reliance on internal sources of funds. The implicit elasticity for current receipts less federal grants-in-aid (mostly taxes) was 1.09 during the twenty-year period.

6. During the 1990s, property taxes fell out of favor as a source of funds, as the elasticity dropped to 0.82, down from 1.15 in the 1980s. As a consequence, state and local governments increasingly turned to income taxes to pick up the slack. The 1980-00 elasticity for income taxes was 1.30, by far the highest of any source of funds.

Based on recent experience in the United States, the norm for the elasticity of state and local government finances is closer to 1.1 than 1.0, driven in large part by the rapid escalation of transfer payments to persons. Since federal grants-in-aid have not grown along with expenditures in the long run, state and local governments have had to rely somewhat more on internal sources, especially income taxes, to raise the necessary funds.

This analysis raises more questions than it answers, at least in my mind: Does any state have a tax structure with an implicit elasticity of one? What are its features? Can one design such a tax structure without having a progressive income tax? Will the growth of federal grants-in-aid during the Bush administration help or hurt the financial condition of state and local governments? If Initiative 601 were strictly applied, limiting the growth of state and local government spending to population growth plus the inflation rate (as measured by the implicit price deflator for personal consumption expenditures), what would be the implicit elasticity (my back-of-the-envelope calculation is less than 0.8)? What do spiraling health care costs and teacher pay raises tied to the Seattle consumer price index (which overstates inflation) mean for the inflation rate for state and local government expenditures? As a result, will we see a decline in real state and local expenditures as a percent of real Gross State Product over time, even if revenues grew along with personal income?

Appendix C-23

TAXES PAID ON MEDIAN-PRICED HOMES IN SELECT JURISDICTIONS
Calendar Year 1998

	Rate	Spec Built or Existing	Custom Built
Unincorp. King County (outside RTA)			
Median Priced Single Family Residence		$217,000	$217,000
Sales Tax	0.082	17,794	10,675
Real Estate Excise Tax	0.0178	3,863	1,545
King Total		$21,657	$12,221
Taxes as percent of total purchase price		10.0%	5.6%
Redmond			
Median Priced Single Family Residence		$217,000	$217,000
Sales Tax	0.086	18,662	12,216
Real Estate Excise Tax	0.0178	3,863	1,334
Redmond Total		$22,525	$13,550
Taxes as percent of total purchase price		10.4%	6.2%

Note: Taxes are for Calendar Year 1998. Land values for REET on custom home based on DOR Abstract of Assessed Value.

Appendix C-24

INDICES FOR QUALIFYING FOR A MEDIAN-PRICED HOME

Charts 1 and 2 compare affordability indices across Washington counties. (The charts are based on data from the Washington State University Center for Real Estate Research and Office of Financial Management estimates of 2001 median household income.) Chart 1 shows an affordability index for all households. The index is equal to the income required to qualify for a home at the median price given the 28 percent[2] rule, divided by median income.

An index higher than 100 indicates that median income households have more income than is required to sustain a mortgage on the median-priced home. An index less than 100 indicates that the median income family does not have enough income required to sustain a mortgage on the median-priced home. For example, the dark-colored bar for Wahkiakum County in the chart below shows that the index for Wahkiakum is about 200. This means that the median income family in Wahkiakum County has about twice (200 percent) the income needed to sustain a mortgage on the median-priced home. In Jefferson County, the median income family has only 87 percent of the income to sustain a mortgage on the median-priced home. Notice that in three Washington counties, median income families are not able to qualify for median-priced homes.

The two bars on the chart represent the index with and without property taxes. The dark bar is the full index, which includes property tax in the calculation of the qualifying payment. The light bar in front is the index without property tax in the qualifying payment. By comparing the two bars, one can see the impact of property tax on affordability. The chart shows property tax is not a large driver in affordability. Also notice that generally, the less affordable a county's homes are, the smaller the role played by property taxes in affordability. Higher property values tend to have lower property tax rates. This is because jurisdictions that have a larger value base to tax are generally able to have lower property tax rates to pay for local needs.

[2] The rule of thumb for making mortgage loans is that the mortgage payment plus property taxes on the home plus homeowner insurance should not exceed 28 percent of the purchaser's income.

Chart 1
Qualifying for a Single Family Home by County
(100=Median income qualifies for a median-priced home)

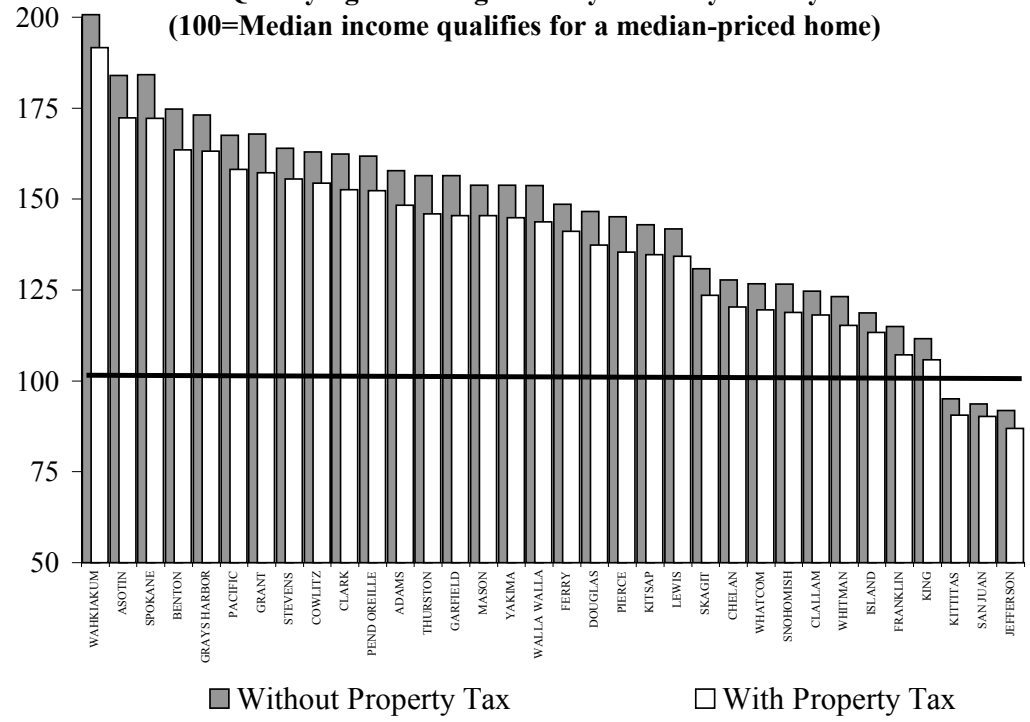

Chart 2
First Time Home Buyer Qualifying for a Single Family Home by County
(100=Median income qualifies for a median-priced home)

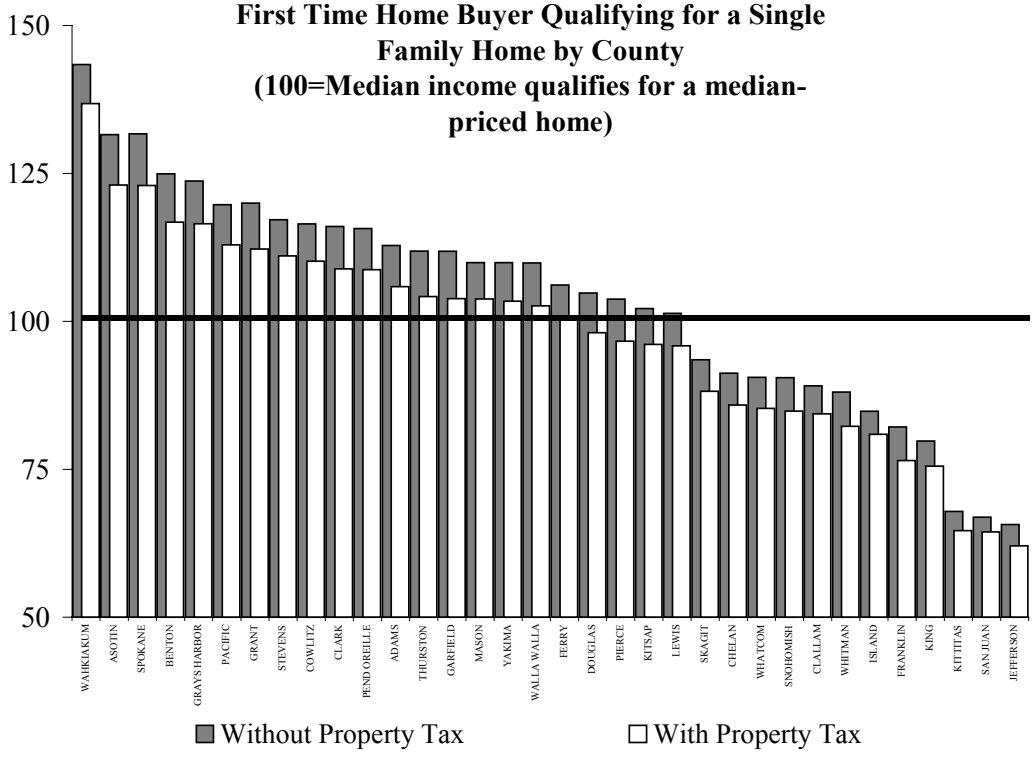

Chart 2 shows the affordability index for *first-time* homebuyers. This index compares median income for first-time homebuyers with the qualifying income needed for a home priced at 85 percent of median price. The index also differs in that the qualifying income has assumptions about a lower down payment and a higher mortgage rate to include mortgage insurance. First-time homebuyers are also assumed to have median incomes at 70 percent of county median income.

In 16 counties first-time homebuyers with median incomes are not able to qualify for median-priced homes. As in the chart for all homebuyers, Table 1 shows property tax is not a large driver in affordability and that property tax plays less of a role in the less affordable counties.

Table 1

Qualifying for a Median-Priced Home

	All Single Family Homes		First-Time Single Family Homes	
	Affordability Index	Affordability Without Property Tax	Affordability Index	Affordability Without Property Tax
Adams	148.3	157.8	105.9	112.8
Asotin	172.4	184.0	123.0	131.6
Benton	163.6	174.8	116.8	124.9
Chelan	120.3	127.7	85.9	91.3
Clallam	118.2	124.7	84.4	89.1
Clark	152.5	162.3	108.9	116.0
Cowlitz	154.4	162.9	110.2	116.5
Douglas	137.4	146.6	98.1	104.8
Ferry	141.2	148.5	100.8	106.1
Franklin	107.2	114.9	76.5	82.1
Garfield	145.5	156.5	103.8	111.9
Grant	157.2	167.9	112.2	120.0
Grays	163.2	173.1	116.5	123.7
Island	113.3	118.7	80.9	84.8
Jefferson	86.9	91.9	62.1	65.6
King	105.8	111.7	75.5	79.8
Kitsap	134.7	143.0	96.1	102.2
Kittitas	90.5	95.0	64.6	67.9
Lewis	134.3	141.8	95.9	101.4
Mason	145.4	153.8	103.8	110.0
Pacific	158.2	167.5	112.9	119.7
Pend Oreille	152.3	161.9	108.7	115.7
Pierce	135.4	145.1	96.7	103.8
San Juan	90.2	93.7	64.4	66.9
Skagit	123.5	130.8	88.2	93.5
Snohomish	118.8	126.6	84.8	90.5
Spokane	172.2	184.2	123.0	131.7
Stevens	155.6	163.9	111.1	117.2
Thurston	146.0	156.5	104.2	111.9
Wahkiakum	191.7	200.7	136.8	143.4
Walla Walla	143.8	153.7	102.7	109.9
Whatcom	119.5	126.7	85.3	90.5
Whitman	115.2	123.2	82.3	88.1
Yakima	144.9	153.8	103.4	109.9

Sources: Washington Center for Real Estate Research at WSU, Office of Financial Management. Information is not available for Columbia, Klickitat, Lincoln, Okanogan, and Skamania counties.

Appendix C-25

COMPARISON OF EFFECTIVE PROPERTY TAX RATES* FOR TAXES DUE IN 1995-2002

County	1995	1996	1997	1998	1999	2000	2001	2002
Adams	1.40 %	1.37 %	1.36 %	1.30 %	1.34 %	1.33 %	1.33 %	1.23 %
Asotin	1.24	1.15	1.17	1.19	1.22	1.29	1.31	1.31
Benton	1.62	1.24	1.33	1.38	1.36	1.32	1.31	1.26
Chelan	1.17	1.13	1.09	1.11	1.12	1.11	1.08	1.10
Clallam	1.05	1.06	1.10	1.13	1.12	1.09	1.07	1.01
Clark	1.34	1.34	1.36	1.28	1.31	1.29	1.27	1.29
Columbia	1.41	1.21	1.23	1.16	1.35	1.35	1.32	1.32
Cowlitz	1.08	1.05	1.10	1.06	1.11	1.05	1.11	1.15
Douglas	1.23	1.22	1.29	1.23	1.26	1.24	1.34	1.33
Ferry	1.04	0.99	1.07	1.00	1.04	1.06	1.03	1.02
Franklin	1.38	1.34	1.38	1.38	1.40	1.43	1.42	1.36
Garfield	1.31	1.30	1.37	1.59	1.53	1.49	1.48	1.51
Grant	1.23	1.16	1.27	1.29	1.26	1.19	1.25	1.24
Grays Harbor	1.26	1.22	1.17	1.14	1.25	1.21	1.23	1.22
Island	0.92	0.92	0.99	0.98	0.98	0.99	1.00	0.90
Jefferson	1.07	1.04	1.08	1.12	1.17	1.13	1.10	1.09
King	1.22	1.23	1.27	1.18	1.19	1.13	1.07	1.02
Kitsap	1.08	1.25	1.31	1.26	1.32	1.32	1.18	1.22
Kittitas	0.98	0.96	0.98	0.87	0.98	0.98	0.94	0.97
Klickitat	1.05	0.98	1.00	1.05	1.04	1.02	1.11	1.12
Lewis	1.08	1.04	1.06	1.08	1.13	1.13	1.13	1.08
Lincoln	1.36	1.33	1.34	1.28	1.21	1.28	1.33	1.26
Mason	1.01	1.00	1.04	1.04	1.13	1.11	1.15	1.17
Okanogan	1.17	1.14	1.12	1.07	1.05	1.09	1.12	1.10
Pacific	1.01	0.95	1.03	1.07	1.13	1.10	1.18	1.18
Pend Oreille	0.96	0.93	0.94	0.96	1.04	1.02	0.99	0.97
Pierce	1.43	1.38	1.44	1.47	1.40	1.46	1.43	1.39
San Juan	0.77	0.73	0.76	0.76	0.78	0.74	0.70	0.67
Skagit	1.13	1.15	1.20	1.21	1.23	1.18	1.18	1.16
Skamania	0.96	0.93	0.93	0.87	0.92	0.95	0.97	0.96
Snohomish	1.19	1.21	1.24	1.23	1.22	1.17	1.16	1.12
Spokane	1.34	1.33	1.37	1.30	1.32	1.31	1.32	1.34
Stevens	0.92	0.93	0.99	1.05	1.07	1.00	1.05	1.05
Thurston	1.25	1.29	1.36	1.38	1.36	1.36	1.38	1.33
Wahkiakum	0.98	0.93	0.93	0.90	0.96	0.91	0.89	0.93
Walla Walla	1.36	1.28	1.29	1.31	1.31	1.38	1.34	1.33
Whatcom	1.06	1.07	1.12	1.14	1.17	1.14	1.12	1.10
Whitman	1.24	1.20	1.28	1.26	1.29	1.33	1.31	1.35
Yakima	1.22	1.16	1.17	1.21	1.10	1.17	1.18	1.15
Statewide	1.22 %	1.19 %	1.26 %	1.22 %	1.22 %	1.20 %	1.16 %	1.13 %

*Effective property tax rates express taxes as a percent of current market value rather than current assessed value. This rate is calculated by dividing the total amount of taxes due by the total full market value.

Appendix C-26
PROPERTY TAXES PER $1,000 PERSONAL INCOME – FY 1999-2000

	1999		2000	
	Amount	**Rank**	**Amount**	**Rank**
New Hampshire	$57.24	1	$54.54	1
Maine	52.70	2	52.00	2
Vermont	52.27	3	50.69	3
New Jersey	51.61	4	49.92	4
Montana	47.51	5	47.08	5
Rhode Island	46.45	6	47.06	6
Alaska	42.40	8	43.52	7
Connecticut	42.22	10	41.54	8
New York	42.30	9	40.96	9
Wyoming	43.68	7	40.13	10
Wisconsin	40.31	11	39.71	11
Illinois	38.97	12	38.75	12
Texas	36.97	13	36.76	13
Indiana	34.80	19	35.84	14
Iowa	35.63	15	35.69	15
North Dakota	34.24	21	35.62	16
Massachusetts	35.58	16	35.08	17
Michigan	33.47	22	34.46	18
South Dakota	35.49	17	34.45	19
Nebraska	36.49	14	34.09	20
Florida	34.62	20	33.64	21
Arizona	31.82	24	32.76	22
WASHINGTON	35.39	18	31.53	23
Ohio	31.75	25	31.47	24
Oregon	30.03	28	31.29	25
Minnesota	31.98	23	31.12	26
Kansas	31.20	26	31.02	27
Idaho	30.23	27	30.38	28
South Carolina	28.60	32	29.44	29
Pennsylvania	29.42	30	29.32	30
Virginia	29.92	29	29.19	31
Maryland	26.18	35	28.93	32
Colorado	28.80	31	28.83	33
Georgia	27.17	34	27.82	34
Utah	25.45	37	26.52	35
California	27.51	33	26.31	36
Nevada	24.26	39	25.81	37
Mississippi	25.24	38	25.70	38
Missouri	23.93	40	23.66	39
North Carolina	22.65	41	22.91	40
West Virginia	22.13	42	22.80	41
Tennessee	20.10	43	20.71	42
Kentucky	18.95	44	18.89	43
Hawaii	18.69	45	18.58	44
Louisiana	16.61	47	17.53	45
Arkansas	25.98	36	17.25	46
Delaware	15.84	49	16.90	47
Oklahoma	16.70	46	16.84	48
New Mexico	16.01	48	16.38	49
Alabama	12.38	50	13.33	50
U.S. Average	**$32.52**		**$32.07**	

NOTE: Calculations include MVET as an "in-lieu" property tax. Washington MVET was repealed in 2000.