

Measuring the Fiscal Capacity of the District of Columbia—a comparison of revenue raising capacity and expenditure need Fiscal Year 2005

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Abstract

The District of Columbia's District's unique demographic and economic mix often makes it difficult to analyze its fiscal health in relation to other states (and their localities). This study examines the District's ability to meet the expenditures it must incur to provide services to the local population through its own revenues by benchmarking its revenue raising capacity and expenditure need to the national averages that prevail across the state and local governments. Our findings show that the District has one of the most robust tax bases compared to other state and local government, but it also has a high degree of expenditure need relative to other states despite its small size, due to its urban population and the high costs of service provision. From a policy standpoint, the District has made policy choices that make it one of the highest spending jurisdictions; and, the District's effective tax rates also exceed the national averages. However, it is not clear that the high tax rates have overburdened the District economy: to some extent, high tax rates could reflect the District's appeal to tourists and businesses. Higher tax rates could also have been less of a choice and more of a reaction by the District to federal preemptions on its local taxing powers.

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1 Introduction

The District of Columbia is a state disguised as a city, and both sides of its financial ledger show for it. In Fiscal Year 2005 (FY 2005)¹ the District ranked second in the nation (after Alaska) for both its per capita state and local collections and per capita expenditures. The District's \$9,203 per capita own-source revenue collections reveal the concentration of riches one would expect to find in a city experiencing economic revival. Its expenditures, at \$12,446 per capita per year, signal the high needs of a city at the center of a large metropolitan area, which must provide state-level services it has for all of its residents and support a large commuter population.

The District's unique demographic and economic mix often makes it hard to analyze its fiscal health in relation to other states (and their localities)². As the capital of the nation, the District houses the Federal government and the businesses that benefit from proximity to the Federal government.³ The strong demand for a District address gives its government the ability to levy relatively high taxes on businesses and to a lesser extent, on its residents, while Federal preemptions restrict it from taxing commuters and a sizeable portion of its real property. At the same time, as the largest urban area in Metropolitan Washington D.C., the District also houses the poorest in the region, and must provide the social support services for this neediest group. These characteristics complicate the fiscal analysis of the city.

This study examines the District's ability to meet the expenditures it must incur to service the local population through its own revenues. We use the representative revenue system (RRS) and representative expenditure system (RES) approach to benchmark states against the national averages in per capita collections and expenditures.⁴ We find that the District's tax base is one of

* To obtain a full data set, calculations and the description of the data please contact Yesim Yilmaz at yesim.yilmaz@dc.gov.

¹ The Fiscal Year runs from July 1 to June 30 for all states except Alabama, Washington DC, Michigan (October 1 to September 31 for these three states), New York (April 1 to March 31) and Texas (September 1 to August 31).

² In this study, we use the term "state" to include the state and all of its local governments, including counties, municipalities, townships, special districts, and school districts. This level of aggregation is necessary because states vary greatly in terms of the level of government that collect each type of revenue or provide a specific service.

³ Presence of federal government and its urban nature to some extent protects the District and its finances from systemic risks that afflict the rest of the nation. For example, compared to its neighboring counties and states, the sub-prime mortgage crises left the District largely untouched in 2007: In October 2007, for example, only 1 foreclosure was reported for 3388 households as opposed to 1 in 645 in MD and 1 in 1261 in VA [RealtyTrac, 2007]. The District also appears to experience milder revenue shocks: it finished FY 2007 with a projected surplus of \$190.6 [District of Columbia Government, 2007, 24] in stark contrast to the budget shortcomings that dominated the agendas in Maryland, Virginia, and their counties.

⁴ Because of the unique demographic nature of the District, often times, it is excluded from comparative interstate studies. The alternative method is to compare the fiscal health of the District to other cities. For example, a report prepared by the General Accounting Office on the structural deficit in the District does

the strongest in the nation. We also find that the District's expenditure need is among the highest in the nation across many different state and local services, again owing to the urban nature of the District.

Two caveats are in order in interpreting the results: First, our study uses national averages calculated using the representative framework as benchmarks. . It would be misleading to treat benchmark expenditures or revenues as "desired," "optimal," or "necessary" levels of collections and spending. Second, the estimations omit important variables on administrative, institutional and historical factors, constituent preferences, and limitations or inefficiencies in service delivery, which might shed further light on the variations in revenue collections and expenditures across states and their localities.⁵

Interested readers could find a detailed explanation of the RRS and RES frameworks including the history of the methodology in Yilmaz *et. al.* [2006]. The full dataset and calculations including a detailed description of the data is available from the authors.

The rest of this paper is organized as follows: Section 2 presents the results in brief. Section 3 discusses the revenue capacity and revenue effort in the District. Section 4 presents the expenditure need results. Section 5 concludes.

2 Results in Brief

The District has the richest per capita tax base in the nation, and therefore has the highest per capita revenue raising capacity even after taking into consideration the Federal preemptions on its taxing power (Table 1).⁶ In FY 2005, the District would have collected \$8,618 per capita had it taxed its revenue bases at rates that prevail as average in the nation, compared to the national average state and local collections of \$5,345. In this measure, the District leads the nation with a wide margin—Massachusetts had the second highest per capita revenue capacity, at \$7,256. The average per capita revenue capacity in the South Atlantic Census division for this fiscal year was \$5,595, slightly above the national average, whereas the greater South Census region, which includes relatively poorer states, had a revenue collection capacity of \$4,655, at only 87 percent of the national average per capita collections.

During the same fiscal year, the District collected \$9,203 per capita through taxes, user fees and other non-tax revenue sources. This is the second highest level of per capita collections after

both interstate and inter-city comparisons to calculate the structural deficit in the District for FY2000 [General Accounting Office, 2003]. However, the practicality of this approach is limited when it comes to fiscal capacity: While cities have demographic structures similar to the District, the public services for their residents are met by different levels of local and state governments whereas only one level of government exists in the District and is therefore responsible for both state-level and local services. On the revenue side, the District also has both state and local level taxing powers. Therefore, measuring the fiscal capacity of the District in comparison to other states (and their localities) with similar taxing powers and expenditure responsibilities has theoretical and practical appeal.

⁵ In other words, a high measure of revenue or expenditure effort, for example, tells us little about why a state taxes/spends more than the representative amount.

⁶ This number reflects the restrictions on the District's ability to tax non-residents and federal property. In FY2005, the District was not able to tax \$36 billion of personal income earned in the District by commuters. This translates into additional \$2,333 per capita revenue capacity (calculated using the representative tax rate). The federal restriction on taxation of federal property is not unique to the District, but with 29% of its assessed property values in federal buildings, the District is certainly unique in terms of the impact of these restrictions on its tax revenues.

Alaska.⁷ The District's actual collections were 107 percent of its revenue capacity—that is, District's overall effective tax rates are seven percent higher than the national benchmark tax rates. To see this, recall that the revenue capacity compares a jurisdiction's per capita tax base to the national per capita benchmark, keeping tax rates constant. The comparison of actual collections to revenue capacity keeps the tax base constant, and indirectly compares a jurisdiction's effective tax rates to the national average. A figure of greater than 100 percent indicates that the jurisdictions tax rates exceed the national average. In this aspect, the District ranked 14th in the nation. On average, the South Atlantic division's per capita revenue collections, at \$5,578 were above the national average, but almost identical to the division's average revenue capacity. The revenue collections in the greater South Region, despite being significantly below the national average, were two percent above the regional revenue capacity.

Table 1- Results in Brief, FY 2005

	District of Columbia	South Atlantic Division*	South Region	United States
Per Capita Revenue Capacity	\$8,618	\$5,595	\$4,655	\$5,345
% of national average	161	105	87	100
Rank in the nation	1			
Per Capita Revenue Collection	\$9,203	\$5,578	\$4,692	\$5,345
Rank in the nation	2			
<i>% of revenue capacity</i>	107	100	102	100
<i>Rank in the nation</i>	14			
Expenditure Need	\$8,905	\$6,616	\$6,532	\$6,778
% of national average	131	98	94	100
Rank in the nation	1			
Actual expenditure	\$12,446	\$7,105	\$6,035	\$6,778
Rank in the nation	2			
<i>% of expenditure need</i>	140	106	95	100
<i>Rank in the nation</i>	3			

* South Atlantic Division includes D.C., Delaware, Florida, Georgia, Maryland, North and South Carolina, Virginia and West Virginia.

** The South Region includes in addition to the South Atlantic Division states Alabama, Arkansas, Louisiana, Kentucky, Mississippi, Oklahoma, Tennessee and Texas.

On the expenditure side, had the District provided a basket of public goods and services that prevailed as average in the nation for FY 2005, it would have spent \$8,905 per capita. This measure of expenditure need, which reflects both the urban population characteristics, and the high cost of providing public services due to higher input costs, places the District as first place in the nation, at 131 percent of the national average per capita expenditure of \$6,778.

The District's actual expenditures were 140 percent of its expenditure need, ranking the District third in the nation, after Alaska (actual expenditure at 179 percent of its expenditure need) and Wyoming (f 161 percent).⁸ The comparison of actual expenditures to expenditures need indicates the degree to which a jurisdiction expends relative to what is needed to provide an average level of services. Spending higher than actual expenditure need could signal policy choices that reflect

⁷ Alaska's results are not typical: its high dependence on severance revenues (from oil) and rent and royalty payments suggest that the revenue collections are not necessarily borne by Alaska residents.

⁸ Cash rebates to residents funded through the oil windfalls constitute a significant amount of expenditures in Alaska. In FY 2005, over half a billion (an average of \$ \$845 per resident) was rebated through the Alaska Permanent Fund Dividend program [State of Alaska Permanent Fund Division, 2007].

a desire to provide services above national averages, or inefficiencies that would require a jurisdiction to spend more to provide same level of services. The District spends 40 percent more than is needed to provide an average level of service. This high expenditure level is a mixture of policy choices where the District services are certainly above national services (such as medicare) and and inefficiency.

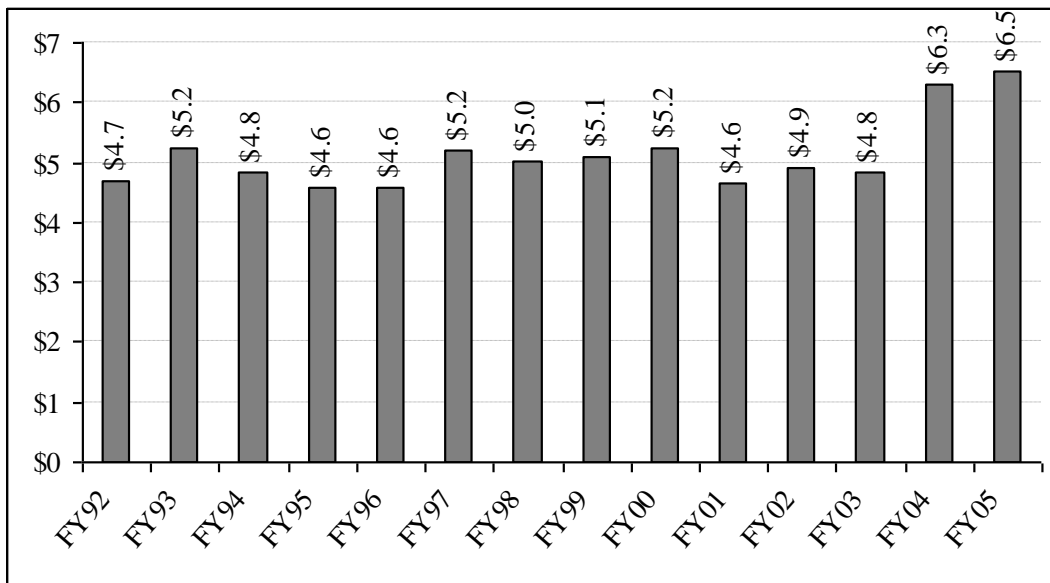
The national rankings for FY 2005 can be found in the appendix.

3 The Revenue Capacity of the District of Columbia

History and Structure of District Revenues

The District experienced a remarkable fiscal turnaround over the last ten years. Following a dip in 1996—the year the city went bankrupt—the District’s revenue collections increased significantly, from \$3.66 billion in FY 96 (measured in 2005 dollars) to \$5.35 billion in FY 05. This represents a real revenue growth of 46.4 percent in this period (or an average of 5.1 percent real growth annually), compared to a national growth of 33.1 percent over the same period (Figure 1). Part of this growth is due to the improvements in the city’s economy, especially the growth in the real property values. But, a number of changes in the institutional structure of the city and tightening of the fiscal controls have also contributed to the city’s fiscal revival (Appendix 1).

Figure 1 - DC Own-Source Revenues, FY 92 – FY 05, in billions of constant 2005 dollars



Source: US Census Bureau, State and Local Government Finances Database

Given its urban nature, the District has a somehow different revenue structure from the rest of the states (Table 2). First, a relatively large share of the city’s economic wealth is in personal wealth and commercial property. Second, the District, as an indispensable address for both businesses and tourists, can levy taxes that are somewhat higher than its surrounding jurisdictions without having to worry about significant revenue loss. Third, limitations on the District’s taxing powers result in a higher tax burden on the commercial sector and residents compared to other jurisdictions. Specifically, the District cannot tax non-residents that work in the city, and this is

no small omission. The non-resident income for FY05, \$36 billion, was twice as much as the income earned by its residents, \$18 billion, for the same year. The District also cannot tax the real property the Federal Government owns in the District. For FY 05, the value of these buildings was \$29 billion, which was 19 percent of the total value of the real property including commercial, residential and utility.

Table 2- The District's Collections, Base and Average Rate compared to the Representative Rate, FY 2005

Revenue Source	D.C. Revenues		DC Base and Rates		National Average	
	Amount (\$millions)	% of Total	Standard Base (millions)*	DC Rate**		
General Sales	\$847	15.88%	3,992.55	10.77¢	6.59¢	per dollar
Selective Sales	\$393	7.37%				
<i>Motor Fuel</i>	\$25	0.47%	175.89	16.69¢	20.34¢	per gallon
<i>Public Utilities</i>	\$221	4.14%	629.84	9.39¢	3.58¢	per dollar
<i>Insurance</i>	\$49	0.92%	1,059.02	1.32¢	1.41¢	per dollar
<i>Tobacco</i>	\$22	0.42%	18.72	106.74¢	71.26¢	per package
<i>Alcoholic Beverages</i>	\$76	1.43%	0.53	\$43.6	\$25.8	per gallon
Distilled Spirits	\$33	0.61%	0.16	\$44.5	\$35.8	per gallon
Beer	\$15	0.28%	0.3	\$39.7	\$20.9	per gallon
Wine	\$29	0.54%	0.07	\$44.9	\$23.9	per gallon
<i>Amusement</i>	-	-	151.2	NA	3.66¢	per dollar
<i>Pari-mutuels</i>	-	-	16.72	NA	2.20¢	per dollar
License Taxes	\$121	2.27%	487.79	19.16	\$16.10	per license
<i>Motor Vehicles</i>	\$0	0.00%	238.9	\$105.58	\$66.29	Per license
<i>Vehicle Operators</i>	\$3	0.06%	199.75	\$9.88	\$7.14	Per license
<i>Corporate Licenses</i>	\$118	2.21%	6.09	\$30.96	\$1,191.71	Per license
<i>Fishing & Hunting</i>	\$0	-	43.04	NA	\$29.35	per license
Personal Income Tax	\$1,148	21.53%	6,326.15	6.6¢	3.81¢	per dollar
Corporate Income Tax	\$199	3.74%	1,186.34	3.77¢	3.64¢	per dollar
Property Tax	\$1,136	21.30%	25,202.22	0.92¢	1.33¢	per dollar
Death and Gift Taxes	\$29	0.55%	24.48	31.32¢	22.16¢	per dollar
Severance Taxes	-	-	217.33	-	3.76¢	per dollar
Other Taxes ⁹	\$470	8.82%	9,975.38	1.55¢	0.72¢	per dollar
User Chges/Nontax Rev.	\$988	18.54%				
<i>Lotteries</i>	\$100	1.87%	49.78	56.65¢	37.03¢	per dollar
<i>General User Charges</i>	\$389	7.29%	9,975.38	1.28¢	3.09¢	per dollar
<i>Other Non-tax Rev.</i>	\$500	9.37%	9,975.38	1.65¢	1.54¢	per dollar
Total Revenues	\$5,332	100%				

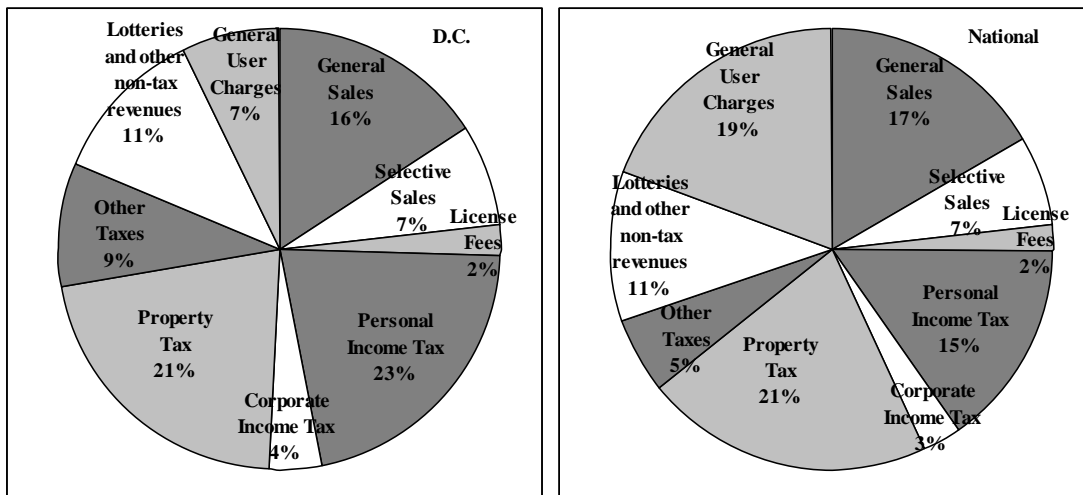
*The tax base value is expressed in the applicable units. For ad valorem taxes, this value is dollars; for excise taxes issued per unit sold the base is measured in kind. **The DC tax rate is the average rate calculated as the ratio of the total collections to the base. This deviates from the published tax rates because the calculations assume the tax is levied over the *full* base—that is exemptions, abatements and alike are put back into the tax base.

⁹ Other taxes include other selective sales, amusement licenses, alcohol licenses, public utility licenses, occupational business licenses, other licenses, documentary and stock transfer fees, and taxes and fees not classified elsewhere. Other non-tax revenues include revenues from property sales (housing/community development, and other), interest revenue, fines and forfeits, rents and royalties, private donations and other miscellaneous general revenue not recorded elsewhere.

Like many other states (and their localities), the District's main sources of revenue are sales, personal income and commercial income taxes, but personal and commercial income generate more than a quarter of the District's revenues whereas these taxes generate less than 18 percent of revenues for all state and local governments in the nation. Personal income tax rates in the District are significantly higher than the national average: the effective average tax rate on the income is ¢6.6 per dollar whereas the national average is ¢3.81 per dollar. Corporations generate six percent of the total tax revenues (through license fees and corporate income taxes) as opposed to the 3.2 percent of total state and local revenues in the nation. The corporate license fees in the District are much higher than the national average (\$7,788 vs. \$1,192); and the effective corporate income tax is slightly above the representative rate (¢3.77 per dollar in the District vs. ¢3.64 in the entire nation).

Lastly, general user charges, which mainly include charges for education, hospitals, air transportation, commercial activities, highways, and toll roads¹⁰ constitute 19 percent of state and local collections in the nation, but only 7 percent in the District. This is mainly due to the differences in scale: the District has only one university, no toll roads, airports, or public hospitals, and therefore fewer opportunities to levy these fees.

Figure 2 - District Revenue Sources vs. State and Local Revenue Sources, National Total, FY 2005



Source: US Census Bureau, State and Local Government Finances Database

Revenue capacity across different revenue items in the District of Columbia, FY 2005

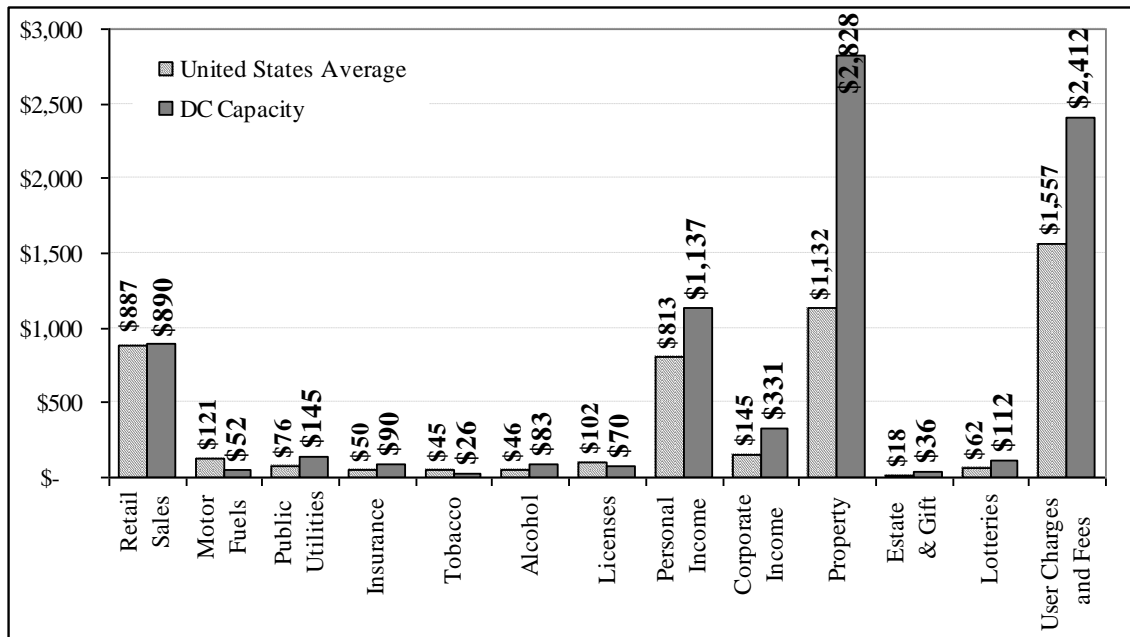
The revenue capacity captures the differences between the tax bases (measured on a per capita basis) across different states. The District ranks number one in its revenue capacity: that is it has one of the strongest tax bases in the nation, especially in general sales, personal income and property. (Figure 2). The District's revenue capacity exceeds the average per capita revenue collections in the nation in all three of these categories.

¹⁰ The full list of general charges include charges and fees on air transportation, commerce, education, hospitals, highways and toll-roads, housing, natural resources, parking and parks and recreation, water and sewage, and others not accounted in these categories.

The sales tax capacity in the District, at \$890 per capita, is slightly above the national average of \$887. The District ranks 23rd in the nation in terms of its sales tax capacity. The District’s sales tax revenue is largely generated through the tourist industry. The statutory tax rate for tangible personal property and selected services in the District is 5.75 percent (and 9 percent for liquor sold for off-premise consumption). The sales tax rate is higher for activities that non-residents are more likely to engage in: 10 percent for restaurant sales, 12 percent for parking in commercial parking lots, and 14.5 percent for accommodations. The effective sales tax rate for FY 2005 was 10.77 percent, significantly above the general sales tax of 5.75 percent.

The District’s personal income tax capacity was \$1,137 per capita, or 1.39 times the national average collection of \$813 per person. In this area, the District ranked 2nd in the nation, after Connecticut, which had a per capita capacity of \$1,234 (or more than 1.5 times the national average). It is important to note that the District personal income tax capacity calculation is adjusted to reflect the limitations on the District’s ability to tax non-residents—we did not include in the tax base all the non-residents that work in the city. Had the District been able to tax non-residents at the representative rate, it would have been able to collect \$3,452, or 4.5 times the national average collections.

Figure 3 – Revenue Capacity by revenue item, DC vs. US, FY 2005



Source: Authors’ calculations

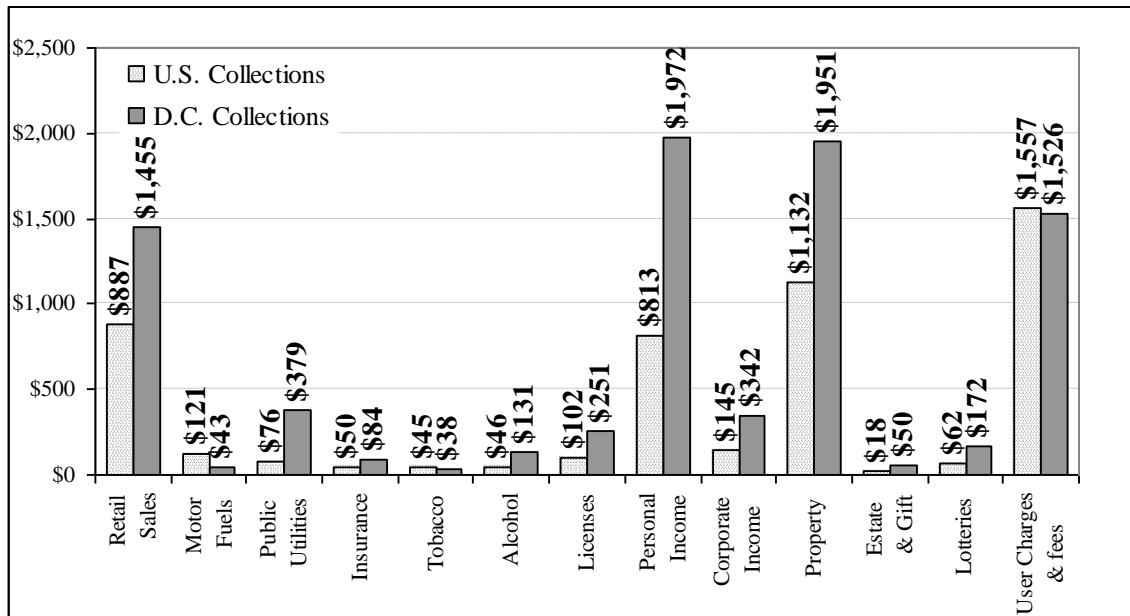
The District’s property tax capacity, \$2,828 per person, is the highest in the nation. That is the value of properties in the District, on a per capita basis, is the highest in the nation. The average property tax collections at the state and local level is \$1,132 per capita—that is, the District’s property tax capacity is more than 2.5 times the national average. Again, this capacity calculation is adjusted by the impact of federal restrictions on the District’s ability to tax federally owned property. This restriction, unlike the restriction on non-resident income taxation, is not unique to the District. However, the value of the federally owned property (and property federally exempted from taxes such as property owned by foreign governments such as embassies) constitute 32 percent of the non-residential tax-base in the District, a much larger percentage

compared to the other states.¹¹ If one were to include the federally exempted property in the District’s base, the property tax capacity would have been \$3,489, or three times the national average.

In sales taxes generated from public utility services, the District tops the nation’s rankings at \$144 per person, or 1.9 times the national average of \$76. The District also ranks number one in tax capacity generated by beer and wine sales (and number 2 is spirit sales), and user charges. The District ranks second in terms of corporate income tax capacity—the per capita capacity in the District is \$331, more than double the national average collections¹²—and in estate and gift tax capacity, third in insurance sales tax capacity, fourth in all other taxes, and seventh in lottery revenue capacity.

The District’s tax capacity is below national levels in three areas. In motor fuel taxes, the District’s capacity, at \$52 per capita, is less than half the national average collection of \$121. In this respect, the District ranks the last in the nation (Wyoming, with a capacity of \$266 per person, has the highest capacity). This finding is not surprising since given its size, urban structure, and reliance on public transportation, the tax base for motor fuel consumption is rather small compared to other states in the nation. Tobacco and licenses are the other two areas where the District’s revenue capacity, on a per capita basis, is below the national level. In both of these cases, the District’s tax capacity ranks the last in the nation. Finally, the District does not have a separate amusement tax, and lacks a tax base in pari-mutuels and severance payments.

Figure 4 – Per capita revenue collections by revenue item, DC vs. U.S., FY 2005



Source: Authors’ calculations

Figure 4 presents a comparison of per capita collections in the District and the US for FY 2005. The District collections exceeded the national average significantly in retail sales, personal

¹¹ For example, in Florida, the value of federally exempted property is 3 percent of non-residential property base.

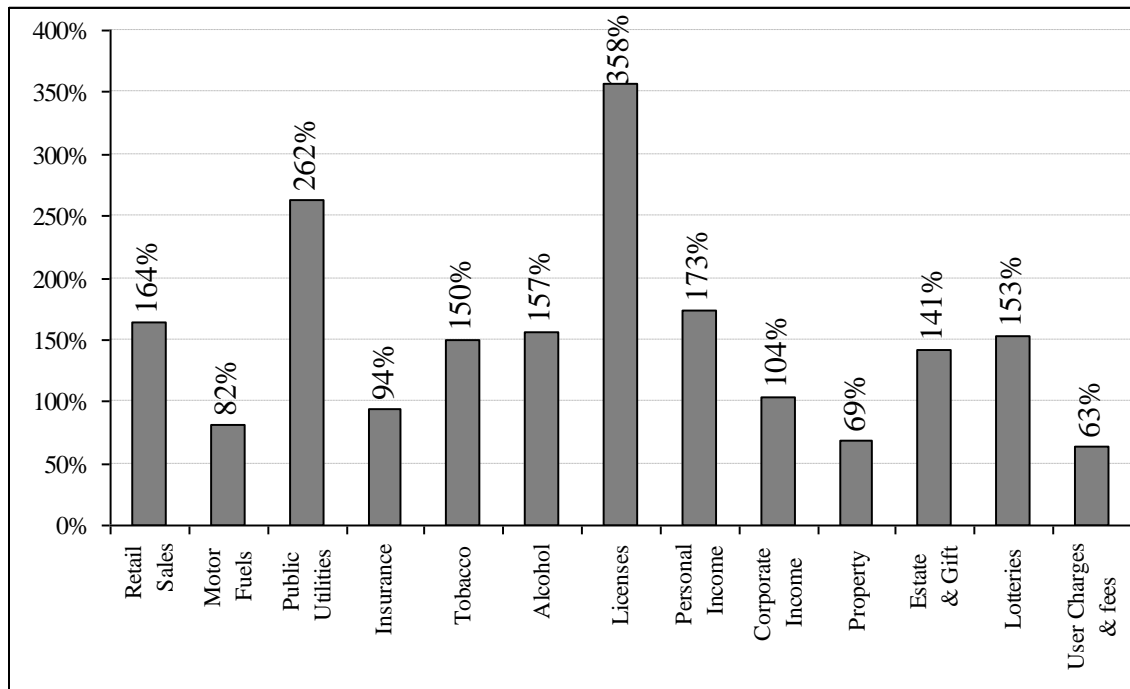
¹² Delaware ranks number 1 at \$461 per capita.

income tax and property tax collections. The District’s per capita collections also exceeded the national average for public utility sales tax , alcohol sales tax, licenses, lotteries and corporate income tax. The total per capita revenue collection across all revenue items in the District was \$9,203, second in the nation after Alaska.

Figure 5 depicts how intensively the District of Columbia taxes its bases across different revenue items. In other words, this a measure of effective tax rates relative to the national average. Overall, the District ranked number 14 in the nation—right at about the national average—the District’s actual collections were only 7 percent above its revenue capacity over all revenue items. Alaska had the highest effective tax rates (largely due to its large severance collections), followed by New York.

The District had the highest effective taxes for corporate licenses in the nation—its collection rate is nearly 6.5 times the national benchmark. (Nor surprisingly, Delaware ranks first in the nation in this measure—collecting at 20 times the national average). The District ranks second in retail tax rates, taxing at 10 percent compared to the national average of 7 percent. In public utilities, the District collected at rates 2.6 times the national benchmark, ranking third in the nation in per capita revenue effort for this item, after Illinois and Florida. The District taxed aggressively in all areas except for motor fuels, insurance services, user charges and fees (this is largely due to the composition of the user charges in the District) and property taxes. In property taxes, the District collected only 69 percent of its revenue capacity, and ranked 43rd in the nation. Texas had the highest effort for property tax collection (at 1.57 times the national benchmark) and Hawaii had the lowest (at less than half the national benchmark rate).

Figure 5 – Tax/revenue collection rates in the District of Columbia as a percentage of national benchmarks FY 2005



Source: Authors’ calculations

Three important trends emerge when compares the Districts tax bases and tax rates: The District’s retail sales tax base and sale tax rate are both above the national benchmark—that is the District

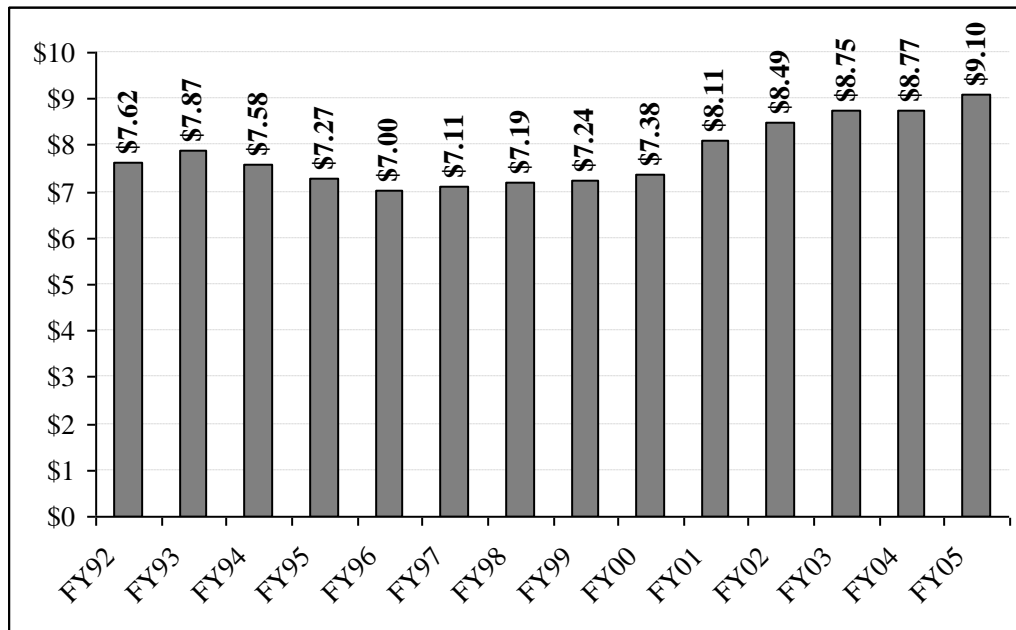
has a relatively strong retail sales tax base and intensely raises revenue from that base. This is because the District, as a tourist destination, chooses to impose higher taxes on visitor-related activities such as restaurants and hotels (and these taxes are largely exported, making high rates relatively more palatable). Second, the District’s personal income base and tax rate similarly exceed the national benchmarks; this may be due to the Federal ban on the District’s ability to tax non-resident income. Third, high taxes on personal income may reflect a political choice to more intensely tax income and not property. While the property tax base is above the national benchmark, the effective rate on property is lower than the national average.

4 Expenditure Need of the District of Columbia

History and structure of expenditures in the District of Columbia

The expenditure trend in District expenditures¹³, depicted in Figure 6, reflects the both the fiscal struggles of the mid-1990s and the fiscal recovery of the last ten years. In the early 1990s, real expenditures peaked at \$7.87 billion in FY 1993. Real expenditures then declined by about 4 percent for three consecutive years reaching a low of \$7.00 billion in FY 1996. As noted previously (See Box 1), this was a period of declining revenues due to the state and local “fiscal hangover” from the national recession in 1991 and Federal government downsizing which adversely impacted the District.

Figure 6- DC Expenditures, FY92-FY05, in Billions, constant 2005 Dollars



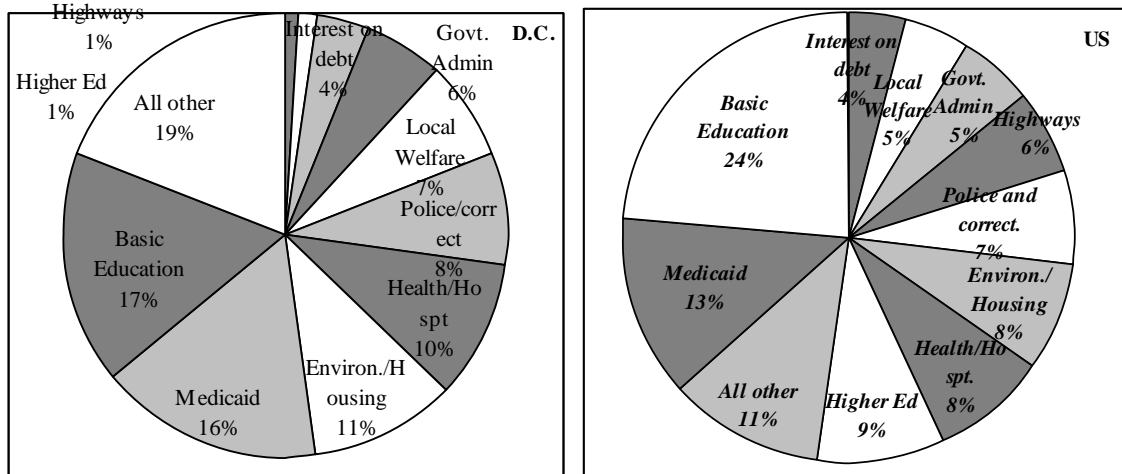
Source: Authors’ calculations

¹³ The expenditure figures include all general expenditure, including current and capital expenditures. Revenues (sum of own-source revenues and transfers) do not always equal expenditure figures, because the flow of debt is not accurately reflected in the figures.

From FY 1998 through FY 2000 the District experienced modest real expenditure growth of 1 to 2 percent as the congressionally imposed Control Board and Chief Financial Officer instituted practices to improve fiscal discipline. Since FY 2000, the District has experienced modest to strong expenditure growth as the District economy has improved and the strengthened fiscal discipline has become institutionalized.

Figure 7 allows for a comparison of the composition of state and local spending in the District and the entire nation. The categories in which the District is most different are higher education and highways. Across all state and local systems, higher education consumes 9 percent of the budget, and highways consume 6 percent but for the District, these two items account for only 1 percent of the local budget. Neither allocation is very surprising: The District does not have a comprehensive state university system (though it does have a state subsidized college – The University of the District of Columbia) and the federal government subsidizes DC residents who choose to go to any state university outside of the District. A number of public and private alternatives are readily available for those who are seeking associates and graduate degrees, and courses in adult education and continuing education. These factors reduce the pressure on the District to expand its higher education budget.

Figure 7 - Comparison of the state and local expenditures, DC vs. US



Source: U.S. Bureau of Census, Census of State and Local Government Finances, FY 2005

Similarly, compared to other states, the District has fewer highways. For example on a per capita basis annually the vehicle miles traveled in the District is 0.006 miles, as opposed to 0.01 miles in the entire nation (for state and local levels). Similarly, the measure of lane miles per capita in the District (0.01 miles per capita) is only one third of the same measure averaged for the nation (0.03 miles per capita). Additionally, the urban nature of the city makes it possible for public transportation to shoulder a relatively larger share of the transportation burden which is likely to reduce both lane miles and vehicle-miles traveled.

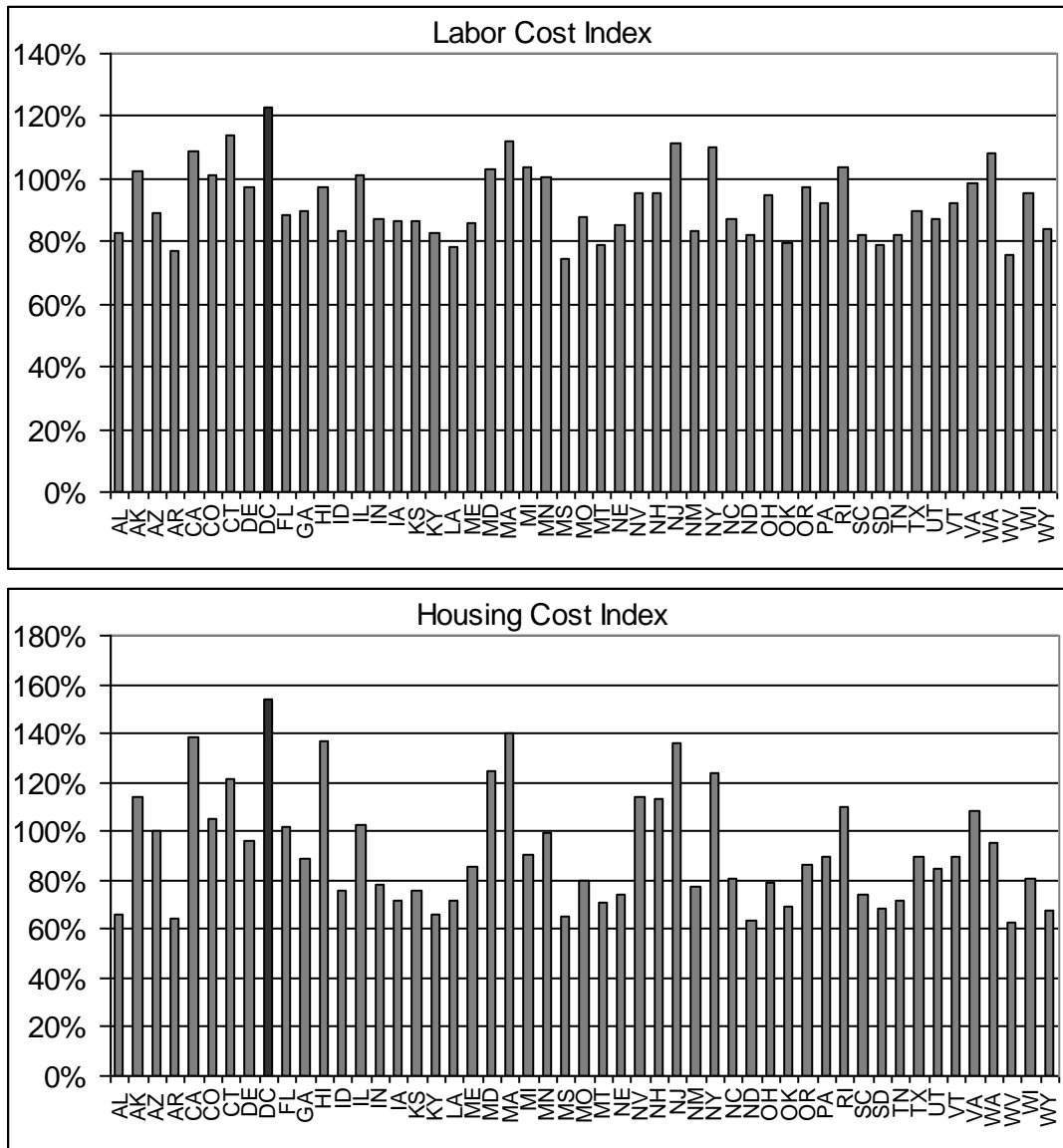
Spending on schools in the District, for FY 2005 lagged behind the national average. The District allocated 17 percent of its budget to basic education while across all state and local governments this allocation was 24 percent. On the other hand, the District government spent more on local welfare, Medicaid, and housing and environment compared to other state and local systems.

Expenditure Need of the District of Columbia

The District tops the nation in total expenditure need—per capita funds the District must spend to provide average level of services in the District—at \$8,914 per capita, compared to the national average state and local expenditure of \$6,778. (See the appendix on methodology for the calculation of the expenditure needs).

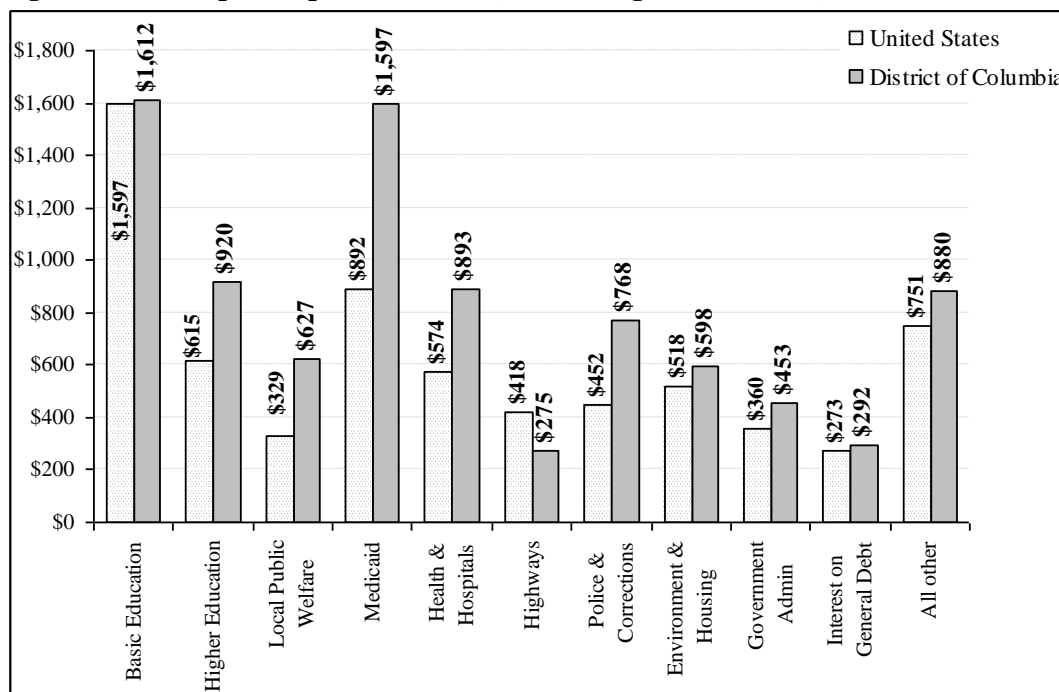
Expenditure need is a function of two elements: 1) demographics, which impact the demand for services, and 2) the cost of providing the service. Of these two factors, the major cost driver in expenditure need calculations is the cost of providing the service. Two states with similar need factors (such as poverty rate) could have very different expenditure needs if the the service costs—that is the costs of labor and capital—vary across the two jurisdictions.. Using the Bureau of Labor Statistics data, we find that the cost of hiring state and local government employees in the District is 1.23 times the national average cost (see the appendix for details on methodology). We use the housing costs as a proxy of the cost of capital—buildings in the case of state and local services. The district’s housing costs are 154 percent of the national average (Figure 8).

Figure 8 – Labor and Housing Cost Indices, 2005



As a result, the District’s per capita expenditure need is highest in the nation in seven of the ten separate expenditure items we consider in this study (Figure 9 and Table 3).¹⁴ These areas are higher education, local public welfare, Medicaid, health and hospitals, police and corrections, environment and housing, government administration, and all other. The District’s expenditure needs are highest compared to the national benchmark in the areas of local public welfare, Medicaid and health and hospitals. These findings are not surprising since the poverty rate is the major cost driver in these areas, and the District had the highest poverty rate in the nation relative to the 50 states (19.4 percent, compared to the national average of 13.1 percent).¹⁵ The District’s per capita expenditure need is \$626 per capita in local public welfare, at 190 percent of the national average per capita expenditure of \$329. In Medicaid, the District’s per capital expenditure need is \$1596 per capita, at 179 percent of the national average. Per capita health and hospital expenditure need in the District is \$891, at 159 percent of the national average of \$574.

Figure 9 - Per Capita Expenditure Need, US average and the D.C, FY 2005



Source: Authors’ calculations

The expenditure need for police and corrections is also very high at 170 percent of the national average or at \$768 per capita. These results are driven by the relatively high crime rates in the District. However it is important to note that even though expenditure need estimates for police and corrections are high, the actual need for local resources might be lower given that the federal

¹⁴ The District’s expenditure need is also highest in the nation in “all other” category which is a collection of smaller expenditure items.

¹⁵ In fact childhood poverty and labor costs explain 76 percent of the variation in the expenditure need index. A OLS regression of the expenditure index on the childhood poverty rates and labor cost index yields the following estimates (standard errors in parenthesis):

$$\text{Expenditure Need Index} = 46.16 + 37.65 \text{ Childhood poverty rate} + 0.97 \text{ Labor cost index}$$

$$(4.95) \quad (5.37) \quad (0.11)$$

government subsidizes corrections by running the court and correction systems for felons in the District of Columbia.

Similarly, higher education estimates (\$918 per capita at 150 percent of the national average) do not take into consideration the federal subsidy which allows D.C. residents to attend any state college at in state tuition rates.¹⁶

Table 3 – Representative expenditure system, FY 2005, in comparison to actual D.C. expenditures

	United States		District of Columbia	
Population (July 1, 2005)	296,507,061		582,049	
	Total Expenditure (in \$ millions)	Per Capita Expenditure	Total Expenditure (in \$ millions)	Per Capita Expenditure
Direct General Expenditure	\$2,009,644	\$6,778	\$7,244	\$12,446
Basic Education	\$473,520	\$1,597	\$1,235	\$2,121
Higher Education	\$182,268	\$615	\$102	\$174
Local Public Welfare	\$97,557	\$329	\$523	\$899
Medicaid	\$264,450	\$892	\$1,166	\$2,004
Health and Hospitals	\$170,244	\$574	\$717	\$1,232
Highways	\$123,900	\$418	\$71	\$122
Police and Corrections	\$133,912	\$452	\$579	\$994
Environment and Housing	\$153,451	\$518	\$771	\$1,325
Governmental Admin.	\$106,601	\$360	\$417	\$716
Interest on General Debt	\$80,980	\$273	\$279	\$479
All other	\$222,762	\$751	\$1,384	\$2,379

The District ranks fifteenth in terms of basic education need. The expenditure need on a per capita basis is \$1,611 in the District, almost at par at the national average of \$1,597 per capita. While the child poverty rate in the District, at 36 percent (41.5 percent after adjusting for the cost of living) is the highest in the nation, the number of school children in the District is relatively low—the District accounts for the 0.2 percent of the national population but only 0.1 percent of the school age children that are likely to attend public schools (including charter schools). Furthermore, 22 percent of the cohort attends private schools in the District compared to a cohort enrollment rate of 11 percent in the nation. The District ranks second in private school enrollment rate following Delaware where one quarter of all school age children attend private schools. The high need for serving poor school age children (which we assume require 1.6 times the per pupil expenditure requires for those students that are not in poverty) is thus cancelled out by low student counts, leading to an expenditure need measure closer to the national average.¹⁷

¹⁶ While benefiting D.C. residents, this subsidy has often been blamed for crippling the local university system in the District of Columbia.

¹⁷ We have tried to improve the methodology by including as cost drivers children with physical and learning disabilities, children who are non-native speakers of English. We assumed that children with disabilities would require additional funding that equal to 1.9 times the per pupil expenditure and children who are non-native speakers would require additional funding that is equal to the per pupil expenditures. The consequent workload factor is not significantly different from a workload factor that is derived by using the number of children in poverty. The average difference was within two percentage points of the basic workload factor that depends on child poverty levels only. In the case of the District, the difference was 7 percent; that is, adding more criteria to the workload factor reduced it from 0.00158 to 0.00146. While in theory adding disabled children and non-native speakers of English is a refinement, measurement problems render this approach less useful. The data from the American Community Survey is self-reported, and we suspect that parents are more likely to report their children as disabled or non-native

Comparing the actual expenditures to expenditure need shows that the District's actual expenditures are 1.4 times its expenditure need on a per capita basis (Figure 10). This places District third in the nation following Alaska (spending 1.8 times its need) and Wyoming (spending 1.6 times its need). High actual expenditures compared to the expenditure need could reflect cross-state differences in local preferences about service levels and the relative efficiency of the government in providing these services.

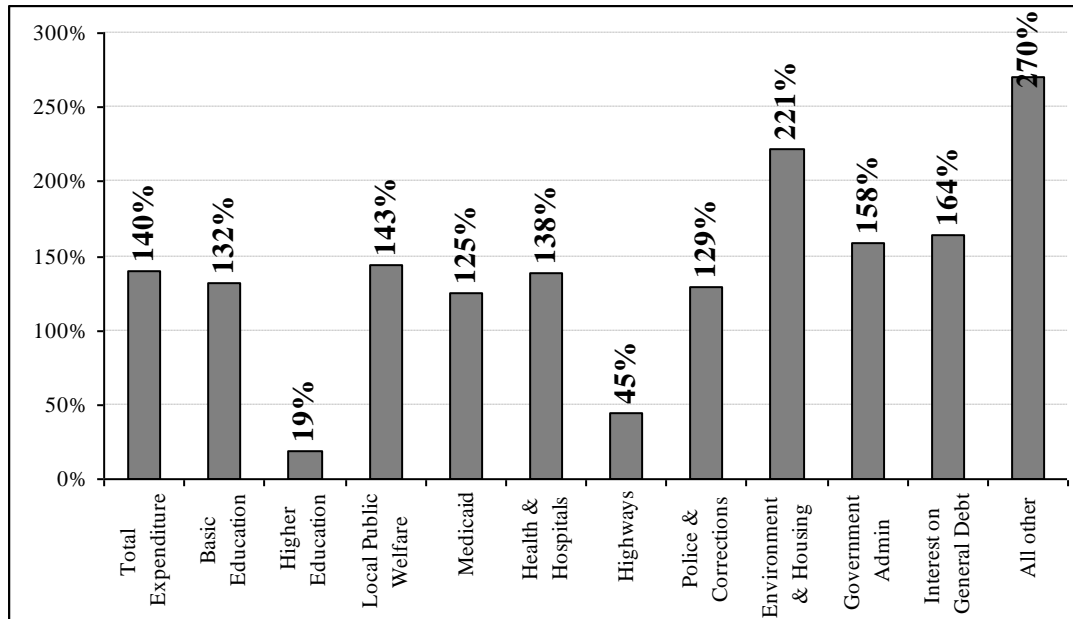
The District has the highest expenditure effort in environment and housing, with an actual expenditure of \$1,325 per capita or 2.21 times its expenditure need for this item. This is the highest expenditure effort level for housing and environment in the entire nation. The District ranks fifth in the nation for its spending on debt relative to its need, following Alaska, Massachusetts, Connecticut and Hawaii. The District ranks fourth in the nation in terms of its expenditures for government administration relative to its need, after Alaska, Wyoming and Delaware. The per capita expenditure for government administration is \$716, more than 1.5 times its estimated expenditure of \$453.

Basic education expenditure effort in the District is also high, with the city spending 1.32 times its estimated need on a per capita basis. In basic education, the major cost driver is special education, which is riddled with problems. Special education expenditures account for one third of the total education budget (including tuition for out-of-state education, transportation and legal fees)¹⁸, primarily because the District had failed to provide adequate education for its special education students for such a long time that it has been sued, and lost, repeatedly and is now mandated by court order to pay for out-of-state tuition and transportation.

Figure 10 – Actual expenditures as a percentage of expenditure need, per capita, FY 2005

speakers if the school system identifies the child as such. And poor districts are less likely to identify children with language barriers or learning or physical disabilities if such findings would not result in additional funds.

¹⁸ In FY2005, the total budget for the DC Public Schools (DCPS) was \$760 million. This included \$264 million of allocations towards special education and related expenses—34 percent of the total DCPS budget [District of Columbia Government, 2005, D-18].



Source: Authors' calculations

Higher education expenditures relative to the District's effort measure, on the other hand is very low. While the expenditure need in this area is \$920 per capita, actual expenditures is less than one-fifth of this amount at \$174. The low effort is could partly be explained by the District of Columbia College Access Act of 1999, which provides federal subsidies for high school graduates from the District of Columbia so that they can state colleges and universities outside the District of Columbia and only be required to pay in-state tuition.¹⁹ In FY 2005, the Federal government extended \$32 million in grants. In the same fiscal year, the total budget for the University of the District of Columbia was \$49.6 million.

Given its urban nature, the District's expenditure need for highways is relatively low, yet its expenditure effort is still lacking. The District spends, on a per capita basis, \$122, or only 45 percent of its expenditure need of \$275. This is a consequence of the policy of tying highway funding to motor fuel tax receipts. As mentioned in Section 3, the motor fuel tax base on a per capita basis is only half the national average—this yields a revenue capacity of \$52 per capita; the District does not tax this base intensively, collecting only 80 percent of its revenue capacity, or \$43 per capita.

The comparison of actual expenditures to expenditure need calculations is important because they could provide guidance for further research into the areas of public service where the District may have high degrees of inefficiencies.²⁰ The District's balanced budget rule also suggests that low effort could point to low revenue capacity, as seen in highway funding. We consider the connection between revenues and expenditures further in the next section.

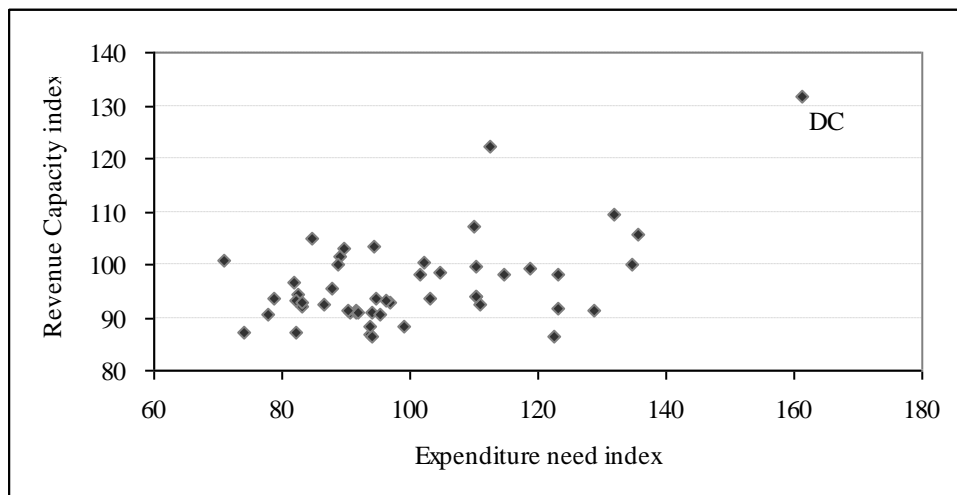
¹⁹ In FY 2003, the subsidy, known as the TAG program and administered by the State Education Office, was expanded to provide grants to students attending historically Black colleges and universities in the country.

²⁰ We are not asserting that having high a relative expenditure effort implies wasteful spending (nor should under-spending be interpreted as under-provision of services). High effort could indicate a preference for higher level of services. But a high effort in areas where citizens complain about service levels is a pretty good indication of institutional problems and inefficiencies.

5 Conclusion

The District is unique in that it has both a very high revenue capacity, and a very high expenditure need. (Alaska is one such other state, but most of its revenues are from severance payments, and not taxes imposed on residents). Most jurisdictions that have relatively rich tax bases also have relatively low need populations (even though their service cost provisions could be high). The correlation coefficient between the revenue capacity index numbers and expenditure need index numbers is 0.55 when the District is included in the sample and 0.33 when it is excluded. (The correlation coefficient goes down to 0.26 when we exclude Alaska too).

Figure 11 – Comparing revenue capacity to expenditure need



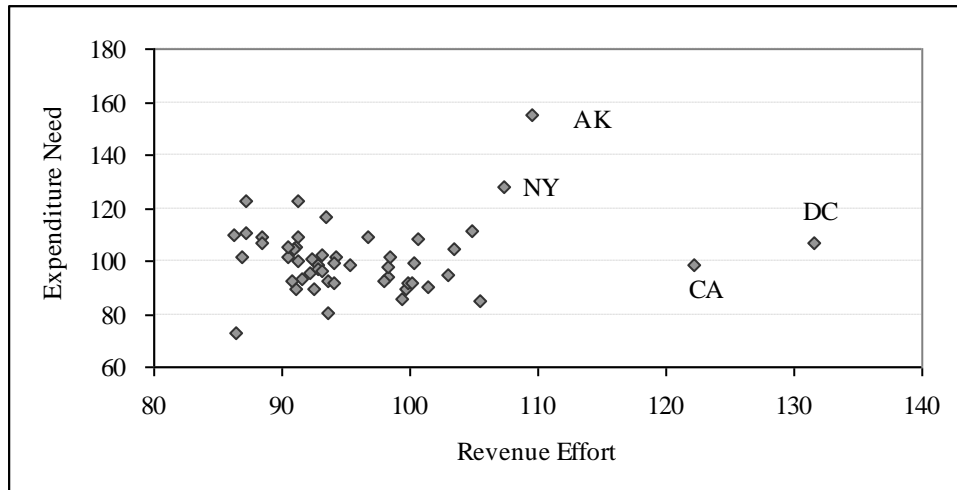
Source: Authors' calculations

Another interesting comparison is that of effective tax rates and expenditure need. States with relatively high expenditure need would have to tax their citizens at higher rates (relative to states with larger economic bases) to deliver a similar level of services. As Figure 11 shows, the relation between expenditure need and average effective tax rates is not necessarily positive—Alaska, New York and the District are among the few states with higher-than-average needs and higher-than-average effective tax rates. The correlation between these two variables is only mildly positive (0.14), but becomes mildly negative if one removes Alaska and Washington DC from the sample.²¹ That is, in states where needs are high, there is not much of an effort to raise taxes. Presumably, tax rates remain low in high need states, since higher taxes would further erode the tax base. This suggests that in such states, the service levels suffer.

The District is one of the few states where high needs could be met by higher than average taxes. The District could command higher taxes simply because it is a desired location for tourists or businesses, and tourists and businesses are willing to pay a premium to for a DC vacation or a DC address. As a result, the District can command high taxes, yet sustain a large and growing economic base. NY shares similar characteristics.

Figure 12 – Comparing revenue effort to expenditure need

²¹ The correlation coefficient becomes -0.20 if NY is removed as well.



As noted elsewhere, the actual collections could be very different from the collections average tax rates would have yielded if the tax base in inelastic or the locality commands high economic rents. The District is a prime example of such a locality, and have therefore sustained tax rates much higher than the national average, and at the same time maintained high growth rates in its income, sales and property tax collections. The city has completed the last 10 years with surpluses while providing services that are much more generous than the rest of the nation in a number of areas.

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Yilmaz Yesim, Sonya Hoo et al. *Measuring Fiscal Disparities across the United States: A Representative Revenue/Representative Expenditure Approach, FY 2002*, Occasional Paper, 74. Tax Policy Center, Urban Institute, and Federal Reserve Bank of Boston, 2006.

Appendices

Appendix 1 A Brief Fiscal History of the District

Over the last decade, the District of Columbia government experienced a remarkable fiscal turnaround. By the end of 1996, the city had accumulated a general fund deficit of \$500 million—almost 20 percent of general fund revenue. In contrast, the end of fiscal year 2007—the eleventh consecutive balanced budget the city achieved—was marked by a cumulative fund surplus of \$1.45 billion.

The fiscal decline of the city was the result of a chain of events: At the onset, the 1990-91 recessions lead to nominal declines in the District's sales and income taxes. The recession was followed by Federal downsizing, which prolonged the economic distress in the city even when the national economy was recovering. Between 1990 and 1998 the District lost over 72,000 jobs, about half of which were jobs in the Federal government. Lastly, the city's poor financial management exacerbated the economic shocks: rather than enforcing fiscal discipline, DC policymakers resorted to gimmicks such changing the property tax calendar in fiscal year 1993 to artificially shift property tax payments between fiscal years. Tax collections faltered, wasteful expenditures prevailed and the city went bankrupt in 1996. As a result, the Congress stepped in to take control over the City's finances.

The District's financial turnaround was a result of a combination of improved governance, greater federal help, and a remarkable economic growth. First, the Congress instituted a Control Board to manage the District government and created an independent Office of the Chief Financial Officer with responsibility over all core financial functions including revenue estimation, tax collection, budget development and execution, financial reporting, and borrowing and debt management. The independent OCFO remained in place upon suspension of the Control Board in 2001, continuing to exercise fiscal discipline through several core practices including improved tax administration, early identification of spending pressures, development of a baseline budget, and a conservative revenue estimates.

The Congress also passed the National Capital Revitalization and Self-Government Improvement Act in 1997 (the Revitalization Act), under which the federal government assumed responsibility for a number state-level services for the District, including the incarceration of felony prisoners, courts, and court-related services. The Revitalization Act also increased the District's Medicaid match rate from 50 percent to 70 percent and the Federal government assumed responsibility for the majority of the District's unfunded pension liability. In exchange for the various types of expenditure relief, the annual federal payment to the District of \$660 million as of FY 1998 was eliminated. The net benefit of the Revitalization Act in FY 1998 was \$201 million.

The third factor in the fiscal turnaround has been the dramatic improvement in the District's economy. Between 1998 and 2007, the District economy added 81,300 jobs and resident employment increased by 36,807. Over the same period, the unemployment rate in the District proper declined from 8.0 percent to 5.7 percent. The most dramatic growth in the District's economy has occurred in the District's property market. Between 1992 and 2001, the value of taxable real property declined by 9 percent from \$48.7 billion to \$44.2 billion. Between, 2001 and 2007, the value of taxable real property increased by 183 percent from \$44.2 billion to \$124.9 billion.

Appendix 2 Data Sources and Methodology for Representative Revenue System (RRS), 2005

This section lays out the details of the representative revenue system (RRS), including data sources used and adjustments made to obtain the Fiscal Year 2005 results. For the methodologies used in studies from prior years, please consult *State Tax Capacity and Effort* by the Advisory Commission on Intergovernmental Relations [1993] and the *Interstate Fiscal Disparity* studies by Tannenwald [1998, 1999, and 2002], Tannenwald and Turner [2004], GAO [2003] and Yilmaz et. al. [2006].

The RRS estimates a state's revenue capacity (or revenue raising potential) by levying a standard collection rate on a uniformly calculated revenue base for each revenue item (taxes, user charges and fees, and other non-tax revenues) in every state. For every revenue item, the standard rate represents the national effective tax or user charge rate, and it is calculated by dividing the national total of tax or user charge collections for that item by the total national revenue base. (When this exercise is done only for taxes, excluding user charges, fees, and other non-tax sources of revenue, one obtains the representative tax system, or RTS.)

For example, in fiscal year 2005, total state and local personal income tax collections were roughly \$241 billion, while the standard base—defined as personal income modified for exemptions and federal and residency adjustments— was roughly \$6.3 trillion (see below for details). Therefore, the standard personal income tax rate—that is, the total tax receipts divided by the total base—for FY 2005 is 3.81 cents per dollar. Applying this rate to a given state's base—for example, the District's \$17.3 billion personal income tax base—and dividing by the state's population yields the per capita tax capacity (\$1,137 for the District). The total per capita revenue capacity in each state is the sum of the per capita revenue capacity estimates for all taxes and user charges (\$8,621 for the District). Calculating the relative position of each state compared with the national average revenue capacity—for FY2005, the national average per capita revenue capacity was \$5,345—and indexing the national average to 100 creates an *index of revenue capacity*. The District scored 161 on this index, ranking number 1 among all states. Our neighbors, Maryland and Virginia scored 11th and 16th respectively, with per capita revenue capacities of \$5,976 and \$5,856.

Comparing actual revenue collections to the potential revenue capacity, again indexed to the national average, creates the *index of revenue effort*. This measure reveals how intensively each state taxes—both within each tax or user charge category, and in total revenues relative to the national average. Following our example, the District collected \$9,198 per capita in tax and non-tax revenues in FY 2005, and scored 107 on the index of revenue effort, ranking 14th among all other states (Maryland ranked 35th, and Virginia 41st, both collected below their capacity).

The remainder of this appendix highlights the data sources used in calculating the standard bases and rates. Each category includes a brief description of the methodology used in constructing the tax base and notes any changes and adjustments made to calculate tax bases and rates.

2.1 State and Local Tax Collections

Source:

U.S. Bureau of the Census, *Annual Survey of Government Finances. State & Local Summary Tables by Level of Government* <http://ftp2.census.gov/govs/estimate/05statetypepu.zip>

2 . II 2005 Population Data

Source

U.S. Bureau of the Census. *Current Population Survey. Table 1: Annual Estimates of the Population for the United States, Regions, and States and for Puerto Rico: April 1, 2000 to July 1, 2006 (NST-EST2006-01)*. <http://www.census.gov/popest/states/NST-ann-est.html>.

2 . III Individual Tax Bases

i) General Sales and Gross Receipts

Sources:

U.S. Bureau of the Census. *2002 Economic Census. Geographic Area Series Files 72: Accommodation and Food Services; 51: Information; 81: Other Services; 71: Arts, Entertainment, and Recreation; and 44–45: Retail Trade*. <http://www.census.gov/econ/census02/guide/geosumm.htm>.

U.S. Department of Commerce, Bureau of Economic Analysis. *Regional Economic Accounts. State GSP Data for 2004 and 2005* <http://www.bea.gov/bea/regional/gsp/>.

Methodology:

The tax base is the sum of retail trade, accommodations, food service, personal services, motion pictures, and arts and entertainment, minus gas, alcohol, gambling, and non-store retail sales.

One limitation we face is that the gross receipts data is from the 2002 economic census, which is conducted every five years (the next Census will be for 2007, with a three-year lag for release). As a least-worst method of scaling the tax base, we increased each state's 2002 value by the growth in its private sector (calculated as the gross state product (GSP) minus the public sector).

In calculating the retail trade base, missing/unreported data points are estimated using other proxies in the following way:

- **Motion Picture:** The revenue figures for motion pictures are limited to motion pictures only (and not sound). Individual values for South Dakota and the District of Columbia are missing but are included in the national total. We distributed the undisclosed portion of the national total between South Dakota and District of Columbia using a combined weight of state populations and number of establishments.
- **Gambling:** Fourteen states (Alabama, Connecticut, Delaware, Georgia, Indiana, Maine, Massachusetts, Montana, New Hampshire, New Jersey, New Mexico, Rhode Island, Vermont, and Virginia) and the District of Columbia did not disclose gambling revenues but reported the number of establishments. The revenues for these states were reported in the U.S. totals. These 14 states and the District were not typical gambling states: while average number of establishments per state is 43 for the entire population of states, the states with the missing data had on average 10 establishments each. We estimated the revenues for each state by distributing the residual revenues (United States total minus all reported) by the number of establishments in each state.
- **Beer, Wine, and Liquor Sales:** Four states (Arizona, Idaho, New Hampshire, and Utah) and the District of Columbia, all with relatively low numbers of establishments—on

average 119 in each as opposed to the national average of 567—did not disclose revenue data (although they were included in the U.S. total). The residual revenues were distributed among these five areas in proportion to their reported number of establishments.

- Following the studies for fiscal years 1997, 1999 and 2002, we take into account the growing importance of non-store retail sales in certain states. Establishments that sell over the Internet or via mail-order catalogues generate most non-store retail sales. If a firm engaging in such forms of commerce has property and employees, or both, located in a state, the state may tax items sold by the firm to resident households or resident businesses. Items sold to out-of-state purchasers, however, cannot be taxed, because of a lack of nexus. In estimates before 1996, all non-store sales of goods were included in the retail sales. However, as the role of electronic commerce grows, including all non-store sales would grossly overestimate the tax base. The Census Bureau estimates that e-commerce accounted for approximately 36 percent of all non-store sales in 2004 and 40 percent of all sales in 2005 {U.S. Census Bureau 2007}. One must account for out-of-state sales in this mix. Currently, no state-level data exist for the flow of electronic commerce. Therefore, the following decision rules were used to account for non-store sales:
 1. For each state, we computed a variable equal to the nationwide non-store sales times the state's share of nationwide personal income.
 2. We compared the actual non-store sales in each state to this variable and applied the following rules:
 - If actual non-store sales were less than or equal to the variables then we assumed that all the non-store sales were made to the residents of the state. Therefore, we kept the entire non-store sales in the retail tax base.
 - If the actual non-store sales were greater than the variables then we assumed that the difference between the actual and estimated sales were made to nonresidents, and therefore should be excluded from the tax base.

ii) Selective Sales: Motor Fuels

Sources

U.S. Department of Transportation, Federal Highway Administration. *Highway Statistics 2004*.

Table MF2, Motor Fuel Taxed 2004.

<http://www.fhwa.dot.gov/policy/ohim/hs04/htm/fe21b.htm>

U.S. Department of Transportation, Federal Highway Administration. *Highway Statistics 2005*.

Table MF2, Motor Fuel Taxed 2005.

<http://www.fhwa.dot.gov/policy/ohim/hs05/htm/fe21b.htm>

Methodology

The tax base is the volume of taxed gallons of fuel for each state.

iii) Selective Sales: Public Utilities

Sources

American Gas Association. *Gas Facts 2006*. **Table 7-2 Gas Utility Industry Sales Revenues, by State 1999–2005**, page 56. <http://www.aga.org/NR/rdonlyres/A19DB4E9-D526-4DD1-A094-0483D2828485/0/0703TABLE72.PDF>

U.S. Department of Energy, Energy Information Administration. *Annual Electric Utility Report (EIA-861)*, **File 2 Total Electric Industry Revenue, Sales, and Customers, By State, Establishment, Class of Service**. <http://www.eia.doe.gov/cneaf/electricity/page/eia861.html>

Federal Communications Commission, Industry Analysis and Competition Division. *Statistical Trends in Telephony, 2007*. **Table 15.5, Telephone Industry Revenues by State**. <http://www.fcc.gov/wcb/iatd/trends.html>.

Lande, Jim, Almoguera, Pedro, and Lynch, Kenneth, **Telecommunications Industry Revenues, 2005**, Federal Communications Commission. Industry Analysis and Competition Division, Wireline Competition Bureau, July 2005. http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-274025A1.pdf

Methodology

The tax base is the sum of revenues of all gas, electric, and telephone companies.

For the telephone industry, which includes terrestrial and wireless telephony, the state revenues are the sum of interstate and intrastate revenues.

For calendar year 2005, only the total telecommunications industry revenue for the U.S. and territories—and not the state-by-state breakdown of this revenue—is available. To obtain estimates for each state, we multiplied the total revenue for the entire country for 2005 by each state’s revenue share from calendar year 2004.

iv) Selective Sales: Insurance

Sources

Insurance Information Institute. *The Fact Book 2005*. **Direct Premiums Written by State, 2004** page 29.

Insurance Information Institute. *The Fact Book 2006*. **Direct Premiums Written by State, 2005** page 29.

American Council on Life Insurance. *Life Insurance Fact Book, 2005*, **Table 10.6, Premium Receipts of U.S. Life Insurance Companies by State, 2004**. http://www.acli.com/NR/rdonlyres/E4B34447-E12F-4F96-86C7-A6FC6A4FF65D/4466/FB05_Ch10_States.pdf

American Council on Life Insurance. *Life Insurance Fact Book, 2006*, **Premium Receipts of U.S. Life Insurance Companies by State, 2005**. http://www.acli.com/NR/rdonlyres/A6113777-77BE-4679-8A06-8B6FE5B9BC6F/4498/FB06_Ch10_States.pdf

Methodology

The tax base is the direct written premiums (or premium receipts) for life, property, and casualty insurance.

v) Selective Sales: Tobacco Products

Source

Orzechowski & Walker, Virginia, USA. *The Tax Burden on Tobacco, Historical Compilation, Volume 41, 2006. Table 10, State Tax-Paid Cigarette Sales 1950-2006.* Telephone: 703-351-5014.

Methodology

The tax base is the number of packages of cigarettes sold.

vi) Selective Sales: Alcoholic Beverages

Sources

Distilled Spirits Council of the United States (DISCUS). *Public Revenues from Alcohol Beverages, January 2005, Table 14 – Revenue per gallon of alcohol from federal, combined state and local and total collections, by Beverage Type, 2004.*

Distilled Spirits Council of the United States (DISCUS). *Public Revenues from Alcohol Beverages, January 2007. Table 14 – Revenue per gallon of alcohol from federal, combined state and local and total collections, by Beverage Type, 2005.*

Methodology

The tax base is the combined consumption in gallons of beer, wine, and distilled spirits. Because census tax data have only aggregate alcohol beverage tax collection values by state, a breakdown of tax collections by beverage type was obtained from DISCUS and used in the calculation of the representative rates.

vii) Selective Sales: Amusement

Source

U.S. Bureau of the Census. *Economic Census 2002. Retail Sales and Selected Service Receipts by State.*

Methodology

The tax base is arts, entertainment, and recreation, plus motion pictures and exhibition, minus promoters of performing arts, sports, and similar events; minus agents/managers for artists, athletes, and other public figures; minus independent artists, writers, and performers; minus coin-operated amusement devices (except slots). Estimates for state-level values for motion pictures, promoters, agents/ managers, independent artists, and coin-operated amusement devices when data are missing are obtained by using the number of establishments as a proxy. This is done as follows:

1. We calculate the difference between the U.S. total receipts and the sum of all disclosed receipts across states. This number is the sum of receipts in all states where the data is not disclosed.

2. We distribute this undisclosed amount across states by using the number of establishments as the proxy.

viii) Selective Sales: Pari-mutuels

Source

Christiansen Capital Advisors LLC. **Gross Annual Wagers of the United States 2004 and 2005**

Methodology

The tax base is the sum of dog racing, horseracing, and jai alai revenues bet within each state.

ix) Licenses: Motor Vehicle Registrations

Sources

U.S. Department of Transportation, Federal Highway Administration. *Highway Statistics 2004*.

Table MV-1, State Motor-Vehicle Registrations.

<http://www.fhwa.dot.gov/policy/ohim/hs02/xls/mv1.xls>

U.S. Department of Transportation, Federal Highway Administration. *Highway Statistics 2005*.

Table MV-1, State Motor-Vehicle Registrations.

<http://www.fhwa.dot.gov/policy/ohim/hs05/xls/mv1.xls>

Methodology

The tax base is the sum of private and commercial motor vehicle registrations in the state.

x) Licenses: Corporations

Source

Internal Revenue Service, *Internal Revenue Service Data Book*, **Table 3, Number of Returns Filed, by Type of Return and State, Fiscal Year 2005**. <http://www.irs.gov/pub/irs-soi/05db03nr.xls>

Methodology

The tax base is the total number of corporation licenses—sum of S corporations (Column 7) and other corporations (column 8)—granted in the state. Separate numbers did not exist for Maryland and District of Columbia, so the combined figure is allotted by each state's personal income ratio.

xi) Licenses: Motor Vehicle Operators

Sources

U.S. Department of Transportation, Federal Highway Administration. *Highway Statistics 2004*,

Table DL-22: Licensed drivers, by State, sex, and age group.

<http://www.fhwa.dot.gov/policy/ohim/hs04/xls/dl22.xls>

U.S. Department of Transportation, Federal Highway Administration. *Highway Statistics 2005*,

Table DL-22: Licensed drivers, by State, sex, and age group.

<http://www.fhwa.dot.gov/policy/ohim/hs05/xls/dl22.xls>

Methodology

The tax base is the number of licenses in each state.

xii) Licenses: Fishing and Hunting

Source

U.S. Department of the Interior, Fish and Wildlife Services, Division of Federal Aid, State and Fish Game Departments. **Hunting License Data Report 2004.**

<http://federalaid.fws.gov/Reports/2004HuntLicenseData.pdf>

U.S. Department of the Interior, Fish and Wildlife Services, Division of Federal Aid, State and Fish Game Departments. **Hunting License Data Report 2005.**

<http://federalaid.fws.gov/Reports/2005HuntLicenseData.pdf>

U.S. Department of the Interior, Fish and Wildlife Services, Division of Federal Aid, State and Fish Game Departments. **National Fishing License Report 2004.**

<http://federalaid.fws.gov/Reports/2004FishLicenseData.pdf>

U.S. Department of the Interior, Fish and Wildlife Services, Division of Federal Aid, State and Fish Game Departments. **National Fishing License Report 2005.**

<http://federalaid.fws.gov/Reports/2005FishLicenseData.pdf>

Methodology

The tax base is the total number of licenses granted by each state.

xiii) Individual Income Tax

Sources

Internal Revenue Service. *Statistics of Income, Individual Income Tax Information by State, 1999, 2000, 2004 and 2005: Adjusted Gross Income, Adjustments and Adjustments for Residency by State and Number of Dependents, Single Returns, Joint Returns and Head of Household Returns.*

Government of the District of Columbia. *Tax Rates and Tax Burdens in the District of Columbia—A Nationwide Comparison 2005, Table 15, Individual Income Tax: Exemption Amounts for Singles Returns, Joint Returns, Head of Household Returns and Dependents.*

U.S. Department of Commerce, Bureau of Economic Analysis. *Regional Economic Accounts, State Annual Personal Income, SA04—Income and employment summary, 2004, 2005.*

<http://www.bea.gov/regional/spi/default.cfm?satable=SA04&series=ancillary>

Methodology

The tax base is the adjusted gross income (AGI) modified for federal adjustment amounts and residency adjustments, net of exemptions. The formula of this modification is as follows:

Individual Income Tax Base = AGI + Adjustments – Adjustments for Residence – Exemptions

We did not make the residence adjustments for the District because of the unique restrictions on the District to tax non-residents.

Calculation of Adjustments:

The total adjustment figure is available, but not adjustments by state. We calculate the state values by using the ratio of each state's adjustment to total adjustments for FY 2002.

Calculation of Exemptions

For each state, we found the exemption level for each type of exemption. For states that offer tax credits rather than exemptions—these are Arkansas, California, Kentucky, Delaware, Nebraska, Oregon and Wisconsin, we calculated an “above the line” valuation of the tax credit by the following steps:

- First we calculated an effective income tax rate for the state offering credit by dividing the AGI for this state by the total income tax receipts in that state
- Then we divided the tax credit amount by this effective tax rate.

For each type of exemption, we needed to obtain a “representative” exemption figure. To do so, we used income tax receipts of each state as a weight. Summing this through all exemption types, we obtained the total exemption value for that state.

In calculating the exemptions and AGI for FY 2005, we use data from calendar years 2004 and 2005. However, state-level filing-type data for these calendar years did not report exemptions for dependents and the return numbers for single and head of household filers (it only had data on joint returns). Additionally, compared with the data reported for previous years, the 2005 data presented fewer income brackets. As a result, the following adjustments were made:

- *Adjustments for income brackets:* Due to disclosure restrictions, the SOI of the IRS have over the past five years significantly reduced the number of categories by income levels. Up to 2000, the income tax data was grouped by the following categories: Breakeven and loss, AGI between \$0 and \$10,000, and AGI between \$10,000 and \$20,000, \$20,000 and \$50,000 etc. In 2004, the same data was grouped for \$0-20,000. In calculating the total income for FY 2005, the AGI amounts for these categories were calculated using the ratios observed in calendar year 2001. For example, to calculate the AGI for income levels \$10,000 to \$20,000, we used the following steps:
 - Use the 2001 data to calculate the ratio of AGI for the \$10,000–\$20,000 bracket to the total AGI reported for the \$0–\$20,000 bracket.
 - Multiply this ratio to the AGI 2002 to estimate 2005 total AGI reported for this category.
 - Repeat these steps for all income levels not reported in 2005 (but reported in 2001).
 - The FY 2005 data use the estimates calculated for 2005 as well as AGI numbers for 2004.
- *Adjustments for different filing categories, number of exemptions:* Because many filing categories were missing from the 2004 and 2005 data, the number of returns and exemptions filed in 2001 was used as a proxy for the entire fiscal year. However, 2001 data did not contain the number of dependency exemptions. To calculate this number, we used the 2000 returns as proxy:
 - We calculated the ratio of dependency exemptions to the total number of returns filed, for each income bracket for calendar year 2000. Then, we used this ratio to calculate the total number of dependent claims for each income bracket for 2001.

- To estimate the FY2005 data, we first calculated the proportion of different filing types and exemption numbers to the number of total returns for 2001.
- Using these proportions, we estimated the number of returns by type for 2005. We used the 2001 and 2002 data to calculate FY2005 data.
- *Adjustments for “total adjustments to AGI”*: Because the 2005 data didn’t include the total adjustments to AGI, we used the ratio of adjustments to total AGI for each state for 2001, and then multiplied the state-level AGI data for FY 2005 with this ratio to calculate the adjustments for FY 2005.

xiv) Corporate Income Tax

Sources

U.S. Department of Commerce, Bureau of Economic Analysis. *Regional Economic Accounts, SA07N Wage and salary disbursements by NAICS industry, 2004 and 2005.*

<http://www.bea.gov/regional/spi/default.cfm?satable=SA07N&series=NAICS>

U.S. Bureau of the Census. *2002 Economic Census. Sector Receipt Totals by State.*

<http://www.census.gov/econ/census02/guide/geosumm.htm>.

U.S. Department of Commerce, Bureau of Economic Analysis. *National Income and Product Accounts. Table 6.17D. Corporate Profits before Tax by Industry*

<http://www.bea.gov/national/nipaweb/TableView.asp?SelectedTable=232&FirstYear=2005&LastYear=2006&Freq=Year>

Methodology

The tax base is the amount of corporate profits for each state. Because state-level corporate data were not available, the national data were allocated to the states. This involved a multi-step process:

1. For each industry and state, we collected the 2005 annual receipts data by state by industry from the Economic Census, annual wage and salary disbursements data from BEA, and national corporate profits by industry from the BEA for calendar years 2004 and 2005.
2. We calculated the percent of each industry located in each state:
 - a. For each industry, we calculated state-level receipts ratios (state receipts divided by the total receipts in that industry).
 - i. The receipts data is collected through the economic census only, and therefore available only for 2002. We used this data nonetheless, since we are interested in the ratio of state’s receipts to the total receipts in a given industry.
 - b. For each industry, we calculated state-level payroll ratios (state payroll divided by the total payroll in that industry) using wage and salary disbursements as a proxy for payroll.
 - c. We used the ratios calculated in step 2 to allocate national corporate profits in a given industry to each state. In estimating the profits, the receipts were weighted once and payroll was weighted twice:

$$corp.profits_{s,1} = corp.profits_{US,i} \cdot \left(\frac{2 * payroll_{s,i}}{\sum_s payroll_i} + \frac{receipts_{s,i}}{\sum_s receipts_i} \right) / 3$$

- d. We summed the corporate profits across different industries in a given state to obtain the total corporate profits in that state.

Aggregate profit numbers for construction, mining, and manufacturing are not available for the United States, so we used the sum of those numbers as one industry. Disaggregated receipt numbers for finance, information, and utilities are not available at the state level, so we excluded the receipt ratios for those industries in the final apportionment of corporate profits. After these four adjustments, total of the state by state calculation of corporate profits was \$4 million less than the BLS reporting.

xv) Property Tax

Sources

U.S. Bureau of the Census. *American Community Survey, Aggregate Value by Mortgage Status*. 2004 and 2005.

U.S. Bureau of the Census. *American Community Survey, Aggregate Gross Rent*. 2004 and 2005

U.S. Department of Agriculture, National Agricultural Statistics Service. *Farms, Land in Farms, and Livestock Operations 2005, Summary page 9 - Number of Farms, Land in Farms, and Average Farm Size By State, United States, and Puerto Rico 2004-2005*, .
<http://usda.mannlib.cornell.edu/usda/nass/FarmLandIn//2000s/2006/FarmLandIn-01-31-2006.pdf>

U.S. Department of Agriculture, National Agricultural Statistics Service. *Land Values and Cash Rents 2006, Summary, page 6 - Farm Real Estate: Average Value per Acre, by Region and State*. <http://usda.mannlib.cornell.edu/usda/nass/AgriLandVa//2000s/2006/AgriLandVa-08-04-2006.pdf>

Internal Revenue Service. **Returns of Active Corporations**. <http://www.irs.gov/pub/irs-soi/02co06nr.xls>.

U.S. Department of Commerce, Bureau of Economic Analysis. *Regional Economic Information System*, SA05N - Personal income by major source and earnings by NAICS industry, 2004 and 2005. <http://www.bea.gov/regional/spi/SA05Nfn.cfm>

U.S. Bureau of the Census. *2002 Economic Census. Sector Receipt Totals by State*.
<http://www.census.gov/econ/census02/guide/geosumm.htm>.

Federal Communications Commission. Common Carrier Bureau. *2004-2005 Statistics of Communication Common Carriers, Table 2.4 – Access Lines in Service by Customer for Reporting Incumbent Local Exchange Carriers*.
http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-262086A1.pdf

American Gas Association. *Gas Facts: 2006, Table 5-2, Gas Utility Industry Miles of Pipeline and Main, by State, 1990–2005*.

U.S. Department of Energy. Energy Information Administration. *Annual Electric Generator Report (EIA-860), Installed Generator Capacity and Utility Files, 2004 and 2005*.
<http://www.eia.doe.gov/cneaf/electricity/page/eia860.html>

Internal Revenue Service. **Depletable, Depreciable, and Land Assets in the Utility Sector 2005.**

Internal Revenue Service. **Depreciable Assets in the Utility Sector, by Industry 2002. Returns of Active Corporations by Minor Industry.** <http://www.irs.gov/pub/irs-soi/02co01nr.xls>

Methodology

The tax base is the total property value in the state. Total property value consists of farm property, residential property, corporate property, and utility property including all exemptions. State agencies vary widely on the data they report on the total value of property in the state—some include the total value of all property, others of only taxable property, and some only the assessed value of taxable property. For calculating tax capacity, one needs the total potential property tax base, and not all states report this value. The methodology below outlines our alternative measure of taxable property base. The total property calculations matched the state's estimates in many cases.

The tax base is the sum of utility, corporate, residential, and farm property values:

Utility property: Property for the utility sector in each state is the composite of the property (depreciable and depletable assets less depreciation, and land) in the gas, electric, and telephone industries. Assets for each sector are allocated by relative network size (state's share of gas pipeline, electrical generating capacity, and access telephone lines, respectively). In calculating the total property value, each asset base is weighted by its share of depreciable assets that make up the total of the utility industry:

- The share of nationwide depreciable property allocated across the gas, electric, and telephone industries is obtained from the IRS's 2002 Returns of Active Corporations by Minor Industry.
- The nationwide industry shares are applied to the total amount of utility property (combination of depreciable and depletable assets less depreciation and depletion, and land) to obtain national property estimates for each sector.
- Total property value for each sector is allocated across states using the network size proxy.

Summing the state-level property values across the three utility sectors yield the total utility property value estimate for that state.

Corporate property: Corporate property consists of depreciable assets, depletable assets (both minus accumulated depreciation), and land. For 19 broad industry sectors, the amount of corporate property nationwide is allocated across states by calculating each state's share of the nationwide sector total. Subject to some inconsistencies noted below, each state's share is estimated by calculating the share of each sector's total personal income earned in that state. All sectors for each state were then added together to obtain an estimate of total corporate property by state.

- In calculating state's share in personal income, we used BEA data for 2004 and 2005 to construct FY2005. When FY2005 data was missing (as it was for D.C. and Delaware for Construction and Mining) we used the share of that state in that industry for Calendar Year 2004 as a proxy.

Residential property: In theory, this class of property should include all residential property in the state—including exemptions. We obtained the estimate by adding the value of owner occupied housing to the value of rental housing for FY 2005. The value of rental housing was estimated by multiplying Aggregate Gross Rent by 12 (to annualize it), and then dividing Annualized Aggregate Gross Rent by 2 (to obtain Net Operating Income) (following conventional business rules) and then dividing Net Operating Income by .09 (to obtain the Net Present Value with interest rate equal to 9 percent).

This methodology is a major shift from previous studies which relied on the decennial census. The methodology required calculation of the value of new construction built during the years between the last census and the year of study. This was done by adjusting the value of new construction in each state for each consecutive year after the decennial census by the Freddie Mac Conventional Mortgage Home Price index and adjusting this figure to include the value of land. Because American Community Survey allows us to account for all housing (rental and owner occupied) in each state, we did not need to adjust for new construction.

A comparison of the FY 2005 calculation (that relies on ACS) to the FY2002 calculation (which relied on the longer, more complicated methodology) predicts a growth rate in housing values of 30 percent. During the same year period, the Freddie Mac Index grew by 34 percent.

Farm Property: Farm property is the estimated market value of land and buildings on farms for FY 2005. Total market value of this land is obtained by multiplying the total number of acres of farmland in each state by the average value per acre of farmland as of January 1, 2005. Data for average value per acre are missing for Alaska and Hawaii; the farm values for these states were increased by the 48-state growth rate in the market value of farm land and buildings between 1995 and 2005.

We compared the estimates for total property value (sum of utility, corporate, residential and farm property values) with the estimates of property values obtained from state agencies and chose the larger value. When we chose the larger value, we deducted from this value the assessed value of federal and military land, which cannot be taxed.

xvi) Death and Gift Tax

Sources

Internal Revenue Service, *Internal Revenue Service Data Book 2005, Publication 55B, Table 6 – Internal Revenue Gross Collections, by Type of Tax and State, Fiscal Year 2005.*

U.S. Bureau of the Census. **State and Local Government Tax Collections, 2005.**
<http://www.census.gov/govs/www/statetax.html>.

Methodology

The tax base is the sum of all federal death and gift collections for each state. As the federal taxes are applied uniformly across all states, this provides a valid measure of the magnitude of each state's base. The data for Maryland and District of Columbia collections are separated using the allocation of personal income across the two geographies.

xvii) Severance Taxes

Sources

Energy Information Administration. *Petroleum Navigator*, **Domestic Crude Oil First Purchase Prices by Area**. http://tonto.eia.doe.gov/dnav/pet/pet_pri_dfp1_k_a.htm

Energy Information Administration, *Petroleum Navigator*, **Domestic Crude Production by PADD District and State**. http://tonto.eia.doe.gov/dnav/pet/pet_crd_crpdn_adc_mbb1_a.htm

Energy Information Administration. *Annual Coal Report 2005*. **Table 1 – Coal Production and Number of Mines by State and Mine Type, 2005-2004**.

<http://www.eia.doe.gov/cneaf/coal/page/acr/table1.xls>

Energy Information Administration. *Annual Coal Report 2005*, **Table 28 – Average Open Market Sales Price of Coal by State and Mine Type 2005, 2004**.

<http://www.eia.doe.gov/cneaf/coal/page/acr/table28.xls>

Energy Information Administration. *Natural Gas Annual 2004*, **Table 6 – Wellhead Value and Marketed Production of Natural Gas by State**.

http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/natural_gas_annual/historical/2005/pdf/table_006.pdf

Energy Information Administration. *Natural Gas Annual 2005*, **Table 6 – Wellhead Value and Marketed Production of Natural Gas by State**.

http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/natural_gas_annual/historical/2006/pdf/table_006.pdf

United States Geographical Survey. *Mineral Commodity Summaries 2005*, **Table 3 - Value of Nonfuel Mineral Production in the United States and Principal Nonfuel Minerals Produced in 2004**. <http://minerals.usgs.gov/minerals/pubs/mcs/2005/mcs2005.pdf>

United States Geographical Survey. *Mineral Commodity Summaries 2006*, **Table 3 - Value of Nonfuel Mineral Production in the United States and Principal Nonfuel Minerals Produced in 2005**. <http://minerals.usgs.gov/minerals/pubs/mcs/2006/mcs2006.pdf>

Methodology

The tax base is the sum of the value of oil, coal, natural gas, and nonfuel mineral production.

- The price data for crude oil are missing for a number of states. We determined Alaska's price by weighting the North Slope and South prices by their respective production. For the remaining states (Arizona, Florida, Missouri, Nevada, Tennessee, and Virginia) we used the average price for the PADD (Petroleum Administration for Defense District).
- Coal price data are also missing for Alaska, Arizona, Arkansas, Indiana, Kansas, Maryland, Mississippi, Missouri and Washington. When price data is missing, we used the average price from the same census division for FY2005.
- Prices are also missing for natural gas in Florida, Nevada, Pennsylvania, Virginia and West Virginia. To compute the imputed wellhead value of marketed production in these states, we used average prices for the same census division.

xviii) All Other Taxes

Source

U.S. Bureau of Economic Analysis. *Regional Economic Accounts*, **State Personal**

Income Annual Estimates. <http://www.bea.gov/bea/regional/spi/>.

Methodology

The tax base is the personal income for each state. The tax revenue for all other taxes consists of the following categories of tax revenue from Census of Governments (see “State and Local Finance Data” above for source information): Other Selective Sales (T-29), Amusement Licenses (T-21), Alcohol Licenses (T-20), Public Utility Licenses (T-27), Occupational/Business Licenses (T-28), Other Licenses (T-19), Documentary and Stock Transfers (T-51), and Not Elsewhere Classified (T-99).

2 . IV Bases for Individual User Charges/Fees and Other Non-tax Revenues

i) Lotteries

Sources

U.S. Bureau of the Census. *Census of Governments. Income and Apportionment of State-Administered Lottery Funds: 2002.* <http://www.census.gov/govs/state/02lottery.html>.

Government of The District Of Columbia Lottery And Charitable Games Control Board. *D.C. 's Best Bet: Creating a Better Community. Annual Report of the D.C. Lottery, 2005.* p.13, **Statements of Revenues, Expenses, and Changes in Net Assets Years Ended September 30, 2005 and 2004.** <http://www.dclottery.com/pdfs/AnnRpt05.pdf>

U.S. Bureau of Economic Analysis. *Regional Economic Accounts, Disposable Personal Income.* <http://www.bea.gov/bea/regional/spi/default.cfm?satable=summary>.

U.S. Bureau of the Census. *2002 American Community Survey. Table P007, Households.* http://factfinder.census.gov/servlet/DatasetMainPageServlet?_lang=en&_ts=170267274770&_ds_name=ACS_2002_EST_G00_&_program=ACS.

Methodology

The base is the gross revenue from the sale of lottery tickets. We estimate a representative base for each state through a log-form cross-sectional regression of state level economic and demographic data on gross lottery sales. The regression is unweighted, so each state is equally influential in the regression. We use the predicted values for each state’s lottery tax base, including those states without lotteries.²² In such cases, the base is calculated assuming that the prize percentage equals to the prevailing national average and the administrative costs equal to the prevailing regional averages. The resulting base for each state is an estimate of what a state would raise in revenue if it adopted a “nationally representative” lottery.²³

²² During FY2005 the following states did not have lotteries: Alabama, Alaska, Arkansas, Hawaii, Mississippi, Nevada, North Carolina, Oklahoma, Utah and Wyoming.

²³ Assigning of a lottery base to states that do not have lotteries introduce various methodology issues: On one hand, we might be assigning “capacity” to states that would never choose to exercise this capacity, because of local preferences (Utah, for example) or because they have chosen a different method of taxing a similar base (for example, Nevada’s high amusement tax). On the other hand, assigning these states a potential base helps maintain uniformity across states (and indeed, the same approach is used for other

In FY 2005, 41 states had lottery programs. As in the previous study, we exclude Delaware, West Virginia, and South Dakota from the regression because they collected a relatively larger share of revenues from video lottery terminals, which have significantly different revenue and cost structures. For example these three states had a pay-out ratio (prize in proportion to total revenues) of 15 percent where the rest of the states paid out 62% of their revenues.

Variables (and their sources) and the regression results appear below

Dependent Variable

Gross lottery revenues per household – logged (Census of Governments and American Community Survey)

Independent Variables

Disposable income per household – logged (Bureau of Economic Analysis)

Percent of population 18+ in a metro area (Current Population Survey)

Percent of population with at least some college, 18+ (Current Population Survey)

Percent of lottery revenues used for prizes (Census of Governments)

Lottery administrative expenditures per household – logged (Census of Governments and American Community Survey)

Appendix Table 1 – Lottery regression results

Dependent Variable: LOG(GROSS_REV)				
Method: Least Squares				
Sample: 1 38				
Included observations: 38				
White Heteroskedasticity-Consistent Standard Errors & Covariance				
	Coefficient	Std. Error	t-Statistic	Prob.
C	-19.2251	8.759896	-2.19467	0.0356
LOG(Household Disposable Income)	1.875214	0.900033	2.083494	0.0453
LOG(Administrative expenditures per household)	0.464606	0.156021	2.977847	0.0055
Educated Adults	-5.10931	2.11905	-2.41113	0.0218
Price Percentage	7.09248	1.672261	4.24125	0.0002
Percentage of adults who live in metro areas	1.267773	0.538409	2.354665	0.0248
R-squared	0.763125	Mean dependent var		5.892847
Adjusted R-squared	0.726113	S.D. dependent var		0.803651
S.E. of regression	0.420584	Akaike info criterion		1.249594
Sum squared residuals	5.660507	Schwarz criterion		1.50816
Log likelihood	-17.7423	Hannan-Quinn criter.		1.34159
F-statistic	20.61849	Durbin-Watson stat		1.664876
Prob(F-statistic)	0			

taxes). Some states choose not to use an income or sales tax, yet the economic activity underlying these potential revenues should be accounted for.

ii) General Charges

Sources

U.S. Bureau of the Census. *Annual Survey of Government Finances, State and Local Finances by Type of Government*. <http://ftp2.census.gov/govs/estimate/02statetypecd.zip>

U.S. Bureau of Economic Analysis. *Regional Economic Accounts, State Personal Income Annual Estimates*. <http://www.bea.gov/regionalspi/>

Methodology

The revenue base for each state is the personal income in each state. Revenues for General User Charges consist of the following categories from Census of Governments: Air Transportation (A01), Miscellaneous Commerce Activity (A03), Total Education Charges (A09, A10, A12, A16, A18, A21), Hospital Charges (A36), Charges for highways and toll-roads (A44, A45), Housing and Community Development (A50); Charges on Natural Resources (A54, A56, A59), Parking (A60), Parks and Recreation (A61), Sewerage (A80), Waste Management (A81), Water Transport (A87), and all other NEC (A99).

iii) Other Non-tax Revenues (Miscellaneous General Revenues)

Sources

U.S. Bureau of the Census. *Annual Survey of Government Finances, State and Local Finances by Type of Government*. <http://ftp2.census.gov/govs/estimate/05statetypecd.zip>

U.S. Bureau of Economic Analysis. *Regional Economic Accounts, State Personal Income Annual Estimates*. <http://www.bea.gov/regionalspi/>

Methodology

The revenue base for each state is the personal income in each state. Revenues for Miscellaneous General Revenues consist of the following categories from Census of Governments: Property Sale from Housing/Community Development (U10), Other Property Sale (U11), Interest Revenue (U20), Fines and Forfeits (U30), Rents (U40) and Royalties (U41), Private Donations (U50), and Miscellaneous General Revenue NEC (U99).

Appendix 3 Data Sources and Methodology for Representative Expenditure System (RES), 2005

This methodological appendix details the Representative Expenditure System, including all data sources, construction of workload measures, and adjustments and estimations used to obtain the Fiscal Year 2005 results.²⁴

The RES system provides normalized expenditure estimates for a given unit of public services provided. This involves several steps:

First, one must identify and define categories of expenditures principally influenced by factors other than state populations. This study works with ten such categories: elementary and secondary education, higher education, public welfare, Medicaid, health and hospitals, highways, and police and corrections, environmental and housing, government administration and interest on debt. In Fiscal Year 2005, these categories accounted for 89% of all direct general expenditures for state and local governments.²⁵

Next, one must define measurable “workload” factors—other than the price of inputs—that affect the cost of providing the service. The workload factors are used to redistribute the total national expenditure in a given expenditure area adjusting for various need factors. These need factors are largely socioeconomic, demographic and geographic variables, which are not directly related to the prevailing local policy choices. In the simplest case, the workload factor for each state and the District is the share of population in the national population. But for all expenditure items except the “other” category, we use more complicated weights, constructed by taking into consideration relevant population or locality characteristics. For example, the workload measures for highway expenditures are the number of vehicle miles traveled (capturing maintenance costs due to traffic) and total lane miles (measuring maintenance costs due to time and exposure). In Medicaid, we use a combination of the population shares of the disabled, poor, poor children and poor elderly.

The workload factors constructed add up to 1 across the entire nation. To redistribute the total expenditure for each expenditure item, we multiply the national expenditure level by the workload factor in each state to estimate what it would have cost the state to provide one workload-measure unit of services. This gives us the representative total expenditure for each state.

The next step adjusts the representative total expenditure for the variations in the costs of providing similar services in different states. We account for the cross-state variations of labor and other input costs by controlling for the prices inputs used in the provision of public services; the particulars of this methodology are outlined below in the input-cost section. The last step involves normalizing the representative total expenditure adjusted for input cost differences.

²⁴ For earlier methodologies, see Robert *Refuse's Representative Expenditures: Addressing the Neglected Dimension of Fiscal Capacity*, Advisory Commission on Intergovernmental Relations, M-174, December 1990, Yilmaz et al (2006), Tannenwald (2004, 2002) and GAO (2003).

²⁵ We consider the remaining 11% of expenditures collectively in a separate “other” category.

The total expenditure need in a state is the sum of expenditure needs across different expenditure items Indexing the per capita expenditure need to the national average (Set at 100) gives us an index of fiscal need—the primary index used in the RES system.

The remainder of this Appendix details the data sources and workloads used in the RES FY 2005 results.

3 . I2005 State and Local Expenditure Data

Source:

U.S. Census, *Annual Survey of State and Local Government Finances, State and Local Expenditures 2004-05* <http://ftp2.census.gov/govs/estimate/05slsstab1a.xls> and <http://ftp2.census.gov/govs/estimate/05slsstab1b.xls>

The expenditure items include the following

- Elementary and Secondary Education
- Higher Education
- Public Welfare
- Medicaid
- Health and Hospitals
- Highways
- Police and Corrections
- Environmental and Housing (includes natural resources, parks and recreation, housing and community development, sewage and solid waste management).
- Government Administration (includes, Financial administration, judicial and legal, general public buildings, and other governmental administration
- Interest on General Debt
- All other (includes other education and libraries, employment security administration, veterans' services, air transportation (airports), parking facilities, sea and inland port facilities, fire protection, protective inspection and regulation and general expenditure, n.e.c.)

Medicaid payments are the derived from the Census category “Vendor Payments for Medical Care,” which is close in concept to Medicaid.²⁶ This category includes public welfare payments made directly to private vendors for medical assistance and hospital health care, including Medicaid. Payments to vendors must be made on behalf of low-income or means tested beneficiaries, or other medically-qualified persons.²⁷ The local public welfare expenditure value is the remainder of the Census category for public welfare—that is, the difference between total public welfare expenditure and the medical care vendor payments.

3 . II Input-Cost Index Data

Sources:

²⁶ Donald J. Boyd. “The Bursting State Fiscal Bubble and State Medicaid Budgets.” *Health Affairs*, 22, no. 1 (2003): 46-61.

²⁷ U.S. Bureau of the Census, *Government Finance and Employment Classification Manual. October 2006*. Note that starting in 2006, the medical vendors includes state payments to the Federal Government to offset costs of prescription drugs Medicare part D. This study is based on FY 2005 data, prior to this change.

U.S. Department of Commerce, Bureau of Labor Statistics. *May 2005 Occupational Employment and Wage Estimate, State Cross-Industry Estimates.*
<ftp://ftp.bls.gov/pub/special.requests/oes/oesm05st.zip>

U.S. Department of Commerce, Bureau of Labor Statistics. *May 2005 Occupational Employment and Wage Estimates National 4-digit NAICS Industry-Specific Estimates*
<ftp://ftp.bls.gov/pub/special.requests/oes/oesm05in4.zip>

U.S. Bureau of the Census, *State and Local Government Employment and Payroll, 2005. March 2005 State and Local Government Payroll Data by Function.*
<http://ftp2.census.gov/govs/apes/05stlall.xls>

U.S. Department of Housing and Urban Development, Office of Policy Development and Research. **2005 Fair Market Rents, County Level Data,**
http://www.huduser.org/datasets/fmr/fmr2005r/Revised_FY2005_CntLevel.xls

Methodology:

The input-cost adjustment normalizes for cost differentials across states. Two main drivers of the input-cost index are separately constructed labor and capital cost indices.

Labor Cost Index

The labor cost captures the cost of hiring state and local employees in each public service area except for Medicaid. Since the actual health services paid for by Medicaid are provided by the private sector, we calculate the differences in the cost of workers in the areas of health and health support in every locality, taking into consideration the labor market differences.

i) State and Local government labor cost index

In order to calculate the labor costs, we construct a “representative” state and local employee using the NAICS industry-specific estimates and the occupation and wage data compiled by the Bureau of Labor Statistics. Then we price this “representative” employee at each state’s local job market. Specifically, we follow these steps:

- To construct the “representative” state and local employee, we first compile data on the employees of state and local governments across the United States.
 - o Using this data, we calculate the total number of state and local government employees by major occupation category
 - o We then calculate the percentage of workers employed in each major occupation category among the total number of employees.
 - o This gives us a composite, “representative state and local employee.”
- To price this “representative” employee at each state’s labor market, we first find the annual median wages in a major occupation category for each state across all sectors
 - o When data is missing for a given state, we use the average of the median salary in this occupation for that state’s census region.²⁸

²⁸ These changes include: Delaware, for production occupations, District of Columbia, New Jersey, and Vermont for farming, fishing, and forestry occupations, Idaho, Michigan, Oklahoma and Utah for education, training, and library occupations, Illinois for building and grounds cleaning and maintenance occupations, Kentucky for community and social services occupations and legal occupations, New Mexico, for sales and related occupations, Tennessee, for personal care and service occupations.

- We then price the representative state and local employee by multiplying the annual median wages by its corresponding major occupation, and summing across all occupations.

This approach to calculating the labor costs is new. Previous studies by ACIR, and later by Tannenwald (2002, 2004), and Yilmaz *et. al.* (2006) derived the labor cost index from the earnings for males aged 45-64, controlling for educational attainment. However, the earnings data—available from the Census and the American Community Survey for non-census years—has a major drawback: the underlying surveys log respondents by their place of residence, and not by their place of employment. This is obviously problematic for the District, which draws the majority of its workforce from surrounding suburbs in Maryland and Northern Virginia.²⁹ GAO (2003) took a step in the right direction by calculating the cost of a state and local employee in each locality using the BLS data. But GAO approach fell short of the creation of a “representative” employee, so their labor cost index partly reflects the local policy choices.

As the GAO study mentions, this new approach to calculating the labor cost index does not directly take into consideration the effects of age, gender and educational attainment. But this is not a necessarily a drawback: because we price the representative state and local employee using the private sector wages and salaries, which should reflect the characteristics of the local labor market (both the supply and the demand sides of it).

ii) Medicaid Cost Index

Medicaid is an insurance program that pays for health services provided by the private sector. For this reason, calculating the cost of a “representative local government worker” is not a useful approach. Instead, we consider the private sector salaries of a typical health sector worker in a given state, taking into consideration the cross-market differences:

- First, we calculated the national median salary for two types of occupations: Healthcare practitioners and technical occupations Healthcare support occupations
- Then, for each state, we look at gross wages in the health care and health care support occupations by multiplying the total number of employees in each state with the annual median wage.
- We then divide this gross value, summed across to occupation categories, by the total number employed in each category in each state. This gives us the average median salary in a given state.
- The Medicaid cost index is the ratio of each state’s median health salary to the national median salary.

iii) Adjustment for capital costs: fair market rent index

Following the GAO (2003), we account for the differences in capital goods, particularly office space and other real property required for delivering public services. Because data on capital good cost differences is not readily available, we capture the cost differences by using a housing cost index, derived from the Department of Housing and Urban Development’s Fair Market Rent Data. We use the fair market rent for a 2-bedroom apartment as our proxy for space costs. The data is available for each county in every state. For each state we calculate the statewide fair market rent by weighing the fair market rent in each county (or subdivision) by its population size.

Appendix Table 3 outlines the labor, Medicaid and capital cost indices for FY 2005.

²⁹ For example, with this methodology, in FY2002, the labor cost index for the District was 102, and for Maryland and Virginia were 112 and 118 respectively.

Appendix Table 2: Labor, Medicaid and Capital Cost indices

State	Labor Cost	Medicaid Cost	Capital Cost	State	Labor Cost	Medicaid Cost	Capital Cost
United States	100	100	100	Missouri	83	82	79
Alabama	78	83	66	Montana	74	89	70
Alaska	96	120	114	Nebraska	80	88	74
Arizona	84	99	100	Nevada	90	90	114
Arkansas	72	82	64	New Jersey	90	116	113
California	102	124	139	New Mexico	105	108	136
Colorado	95	110	105	New York	78	118	77
Connecticut	107	116	122	North Dakota	103	94	124
Delaware	92	111	96	Ohio	82	106	80
District of Columbia	116	120	154	North Dakota	77	91	64
Florida	83	96	102	Ohio	89	83	79
Georgia	84	94	89	Oklahoma	75	95	69
Hawaii	92	87	137	Oregon	92	79	86
Idaho	79	116	76	Pennsylvania	87	113	90
Illinois	95	89	103	Rhode Island	98	98	110
Indiana	82	94	78	South Dakota	77	49	74
Iowa	82	93	72	South Dakota	74	108	69
Kansas	81	86	76	Tennessee	77	89	72
Kentucky	78	85	66	Texas	84	88	89
Louisiana	73	89	72	Utah	82	90	84
Maine	81	84	85	Vermont	87	92	90
Maryland	97	97	125	Virginia	93	94	109
Massachusetts	105	122	140	Washington	102	94	95
Michigan	98	119	90	West Virginia	71	85	63
Minnesota	95	104	100	Wisconsin	90	98	80
Mississippi	70	107	65	Wyoming	79	114	67

Construction of the input-cost index

Using the labor cost and fair market rent indices we construct an input-cost index for each state. This requires estimating the share of labor and capital costs in service delivery.

To estimate the share labor costs, we annualized the March payroll and then divided this number by the total expenditures for each item. (In this exercise, we assume that the labor costs for debt service and Medicaid are zero.) This gives the ratio of payroll costs in total expenditures for each expenditure item. We assume that payroll expenditures constitute 75% of all compensation expenditures. Thus, we calculate the share of compensation in total expenditure by dividing the payroll’s share by 0.75.

Appendix table 4 outlines the compensation cost percentages in total expenditure, calculated in the described manner.

No data exists for similar calculations of the share of capital costs. Therefore we follow the GAO’s recommendation of using 15 percent across the board except for “interest on debt” items.

Appendix Table 3 – Compensation costs in total expenditure

Expenditure Item	Compensation Costs as % of Total Function Costs
Elementary and Secondary Education	63
Higher Education	55
Local Public Welfare	29
Medicaid ¹	85

Expenditure Item	Compensation Costs as % of Total Function Costs
Health and Hospitals	46
Highways	25
Police and Corrections	78
Environment and Housing	27
Governmental Administration	64
Interest on Debt ²	-
All Other	33

¹Medicaid labor costs are set at 85% , with the remaining 15% allocated to capital

² Interest on debt is not adjusted for costs.

For a given state the input cost index is calculated using the following formula:

$$\text{Input Cost Index} = \text{comp}\% \cdot \text{laborindex} + 15\% * \text{capitalindex} + \left[\frac{-\text{comp}\% - 15\%}{100} \right]$$

where *comp%* is the compensation as percentage of total expenditure for a given expenditure item, and *laborindex* is the state's labor cost index and *capitalindex* is the state's capital cost index.

3 . III Poverty rate adjustments

Sources:

U.S. Department of Housing and Urban Development, Office of Policy Development and Research. *2005 Fair Market Rents, County Level Data*, http://www.huduser.org/datasets/fmr/fmr2005r/Revised_FY2005_CntLevel.xls

U.S. Department of Health and Human Services *2005 HHS Poverty Guidelines* published in *Federal Register*, Vol. 70, No. 33, February 18, 2005, pp. 8373-8375, <http://aspe.hhs.gov/poverty/05fedreg.htm>

Methodology:

The representative expenditure methodology uses a number of poverty measures in calculating the workload factors. These include the number of people in poverty, the number of young in poverty, number of young in 200 percent of poverty, and number of elderly poor.

Both the Census and the US Department of Health and Human services publish poverty measures. The Census publishes poverty thresholds typically used for statistical purposes and the Department of Health and Human Services publishes poverty guidelines to establish eligibility for federal programs. Because most state programs are linked to federal eligibility rules, we use the poverty guidelines published by the Department of Health and Human Services.

These poverty guidelines (as well as the Census thresholds) are identical for the 48 contiguous states and the Washington D.C. (Separate numbers are available for Hawaii and Alaska). This is problematic because the purchasing power of the same income level varies greatly from one locality to another.

IN this study, we follow GAO's recommendation for the cost of living differences. The GAO (2003) used the following formula to account for cost of living differences:

$$\text{Cost of living}_i = 0.56 + 0.44 * \text{Fair Market Rent index}_i$$

We use GAO's approach in calculating a new set of poverty lines for the contiguous states and the District of Columbia. No adjustments are made to the Hawaii and Alaska figures. Appendix Table 5 outlines the poverty rate adjustments after accounting for cost of living differences. The calculations are done for the overall population only. To adjust the sub-populations such as youth or elderly in poverty, we use the ratio of adjusted poverty rate to the poverty rate.

Appendix Table 4 - Poverty Rate Adjustments

	Cost Of Living Index	Poverty Rate	Adjusted Poverty Rate		Cost Of Living Index	Poverty Rate	Adjusted Poverty Rate
United States	1.00	13.2	13.1	Missouri	0.91	13.9	12.1
Alabama	0.85	16.7	13.6	Montana	0.87	13.6	10.6
Alaska	1.06	10.7	13.4	Nebraska	0.89	11.7	10.3
Arizona	1.00	14.0	14.0	Nevada	1.06	10.4	11.3
Arkansas	0.84	16.4	12.7	New Hampshire	1.06	8.0	8.3
California	1.17	13.0	16.4	New Jersey	1.16	8.5	10.3
Colorado	1.02	11.7	12.0	New Mexico	0.90	18.5	16.2
Connecticut	1.09	8.3	9.1	New York	1.10	14.1	15.6
Delaware	0.98	11.5	11.4	North Carolina	0.91	14.6	13.0
District of	1.24	19.4	22.4	North Dakota	0.84	10.2	8.4
Florida	1.01	12.6	12.8	Ohio	0.91	13.5	12.1
Georgia	0.95	14.7	13.7	Oklahoma	0.86	17.1	14.0
Hawaii	1.16	10.0	11.6	Oregon	0.94	13.0	11.7
Idaho	0.89	12.4	10.4	Pennsylvania	0.96	12.1	11.5
Illinois	1.01	12.4	12.5	Rhode Island	1.04	11.5	12.1
Indiana	0.90	12.3	10.9	South Carolina	0.89	15.2	12.9
Iowa	0.88	11.3	9.4	South Dakota	0.86	13.4	10.5
Kansas	0.89	12.3	10.4	Tennessee	0.88	16.3	14.1
Kentucky	0.85	16.4	13.6	Texas	0.95	16.9	15.8
Louisiana	0.88	18.7	16.2	Utah	0.93	10.4	9.4
Maine	0.94	12.5	11.3	Vermont	0.96	10.5	10.1
Maryland	1.11	7.9	8.8	Virginia	1.04	9.3	9.8
Massachusetts	1.18	10.0	12.2	Washington	0.98	11.7	11.3
Michigan	0.96	13.9	13.1	West Virginia	0.84	17.0	14.3
Minnesota	1.00	9.6	9.6	Wisconsin	0.91	10.8	9.3
Mississippi	0.85	20.9	17.3	Wyoming	0.86	9.6	7.3

3 . IV *Calculating Representative Expenditures*

To calculate representative expenditures by function, we multiplied, for each expenditure item, the state's workload measure by the total national expenditure for that items and the state's input-cost index function. Dividing this number by the state population yields the per capita adjusted expenditure need for each function. Then, we normalized the expenditure need estimates so that the expenditure need summed over all states equals the actual national expenditures for that item.

i) Elementary and Secondary Education

Sources:

.S. Census Bureau. *Current Population Survey. Table 1: Annual Estimates of the Population for the United States, Regions, and States and for Puerto Rico: April 1, 2000 to July 1, 2006 (NST-EST2006-01)*. <http://www.census.gov/popest/states/NST-ann-est.html>.

U.S. Census Bureau. *Current Population Survey, 2006 Annual Social and Economic Supplement, POV46: Poverty Status by State: 2005 Below 100% and 125% of Poverty -- People Under 18 Years of Age* http://pubdb3.census.gov/macro/032005/pov/new46_185200_03.htm

U.S. Department of Education, National Center for Education Statistics. *Projections for Education Statistics Table 1. Actual and projected numbers for enrollment in grades PK–12, PK–8, and 9–12 in elementary and secondary schools, by control of school: Fall 1990 through fall 2015.* http://nces.ed.gov/programs/projections/tables/table_01.asp

U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, Table 55. Private elementary and secondary enrollment, teachers, and schools, by orientation of school and selected school characteristics: Fall 2003* http://nces.ed.gov/programs/digest/d06/tables/dt06_055.asp

UNESCO Institute for Statistics, *Education Statistics, Table 19 – Finance Indicators by ISCED Level, 2005.* <http://stats.uis.unesco.org/unesco/ReportFolders/ReportFolders.aspx>

Methodology:

The number of potential public school students equal to the primary and secondary cohorts net of private enrollment. Private enrollment figures by state are not available for FY 2005—the latest number from the Digest of Education Statistics, 2006, is for 2003. To estimate private school enrollments at elementary (preK to 7th grade) and secondary (8th to 12th grades), we used the following steps:

- We calculated the share of each state in the total private school enrollment (primary and secondary) for 2003.
- We noted the national projected elementary and secondary level enrollment in private schools for 2005
- We multiplied these projections by the share of each state in private enrollment for 2003.

Previous studies used children in poverty and the elementary secondary distinction as the workload factors. We follow the same methodology, adjusting the poverty rate for differences in cost of living. We assume that educating the poor costs an additional 80% for each poor child.³⁰ We also assume that the primary to secondary per pupil cost ratio is 0.86.

Thus, the education unit costs equals, in each state

$$\left(+0.8 \cdot \text{povrate}_{18} \right) \left(0.86 \cdot \text{enrollment}_{\text{PRIMARY}} + \text{enrollment}_{\text{SECONDARY}} \right)$$

where povrate_{18} is the rate of poverty among those under 18 years old.

The workload measure is the state’s share of education cost index.

ii) Higher Education

Source:

U.S. Census Bureau, *State Population Estimates. State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2006 - CIVILIAN* http://www.census.gov/popest/states/asrh/files/SC_EST2006_AGESEX_CIV.csv

³⁰ We tried an alternative methodology that takes into consideration the additional services required for Special Education students and students with limited or no English proficiency. The data for these populations are available from the American Community Survey. American Community Survey results are self-reported, but we suspect the incidences are tied to a school district’s ability to identify special education and limited/no English proficiency students. When schools do not have sufficient resources, they tend to underreport these incidences and when schools have sufficient resources, they tend to over-report. Therefore, we used poverty as a proxy for all by increasing the per pupil costs to 80 percent of an average student.

U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 2006*. **Table 177. Total fall enrollment in degree-granting institutions, by attendance status, age, and sex: Selected years, 1970 through 2015**

<http://nces.ed.gov/programs/digest/d06/tables/xls/tabn177.xls>

Methodology:

Using actual enrollment data, we calculate the national college enrollments for cohorts 14-17, 18-24, 25-34 and 35+, assuming three part time students equal one full time equivalent. Then we weigh each state's population in each of these age groups by the national net enrollment ratio in that group.

The workload measure is the state's share of estimated college population.

iii) Public Welfare

Sources:

U.S. Census Bureau. *Current Population Survey*. **Table 1: Annual Estimates of the Population for the United States, Regions, and States and for Puerto Rico: April 1, 2000 to July 1, 2006 (NST-EST2006-01)**. <http://www.census.gov/popest/states/NST-ann-est.html>.

U.S. Census Bureau, *American Community Survey, 2005*. **Percentage of People in Poverty, by State**

Methodology:

Workload measure is the state's share of total population in poverty.

iv) Medicaid

U.S. Social Security Administration, Office of Policy. *SSI Recipients by State and County, 2005*, **Table 1. Number of recipients by state or other area, eligibility category, age, and receipt of OASDI benefits, December 2005**

http://www.socialsecurity.gov/policy/docs/statcomps/ssi_sc/2005/

U.S. Census Bureau. *Current Population Survey, 2006 Annual Social and Economic Supplement*, **POV46: Poverty Status by State: 2005 Below 185% and 200% of Poverty -- People Under 18 Years of Age** http://pubdb3.census.gov/macro/032005/pov/new46_185200_03.htm

U.S. Census Bureau. *Current Population Survey, 2006 Annual Social and Economic Supplement*, **POV46: Poverty Status by State: 2005 Below 100% and 125% of Poverty -- People 18 to 64 Years of Age** http://pubdb3.census.gov/macro/032005/pov/new46_100125_05.htm

U.S. Census Bureau. *American Community Survey, 2005*. **Percentage of Adults 65+ Below Poverty, by State.**

U.S. Census Bureau. *Current Population Survey*. **Table 1: Annual Estimates of the Population for the United States, Regions, and States and for Puerto Rico: April 1, 2000 to July 1, 2006 (NST-EST2006-01)**. <http://www.census.gov/popest/states/NST-ann-est.html>.

Congressional Budget Office, **Fact Sheet for CBO's March 2006 Baseline: Medicaid and the State Children's Health Insurance Program**, Source:
<http://www.cbo.gov/budget/factsheets/2006b/medicaid.pdf>

Methodology:

Medicaid costs are calculated using the federal cost allocations to different demand factors—namely families in poverty, children below 200 percent of poverty, elderly below poverty, and number of supplemental security income (SSI) recipients. Because states' Medicaid payments closely follow federal disbursements, using federal cost allocations is appropriate. Appendix Table 6 shows the federal benefit payments by eligibility category for FY2005.

Appendix Table 5- Federal Benefit Payments by Eligibility Category (In Billions of dollars)

Demand Factor	FY2005 Outlay	Percentage of total
Aged	39.1	24.0%
Blind	73.9	45.3%
Children	29.8	18.3%
Adults	20.2	12.4%
Total	163.0	100%

Source: CBO

Following this table, Unit Medicaid Expenditures is calculated in this way:

Unit Medicaid Expenditures = 0.124 * (number of families below poverty) + 0.183* (number of children below 200% of poverty) + 0.240*(number of elderly below poverty) + 0.453*(number of federal SSI recipients).

Unit Medicaid Expenditure measure captures, not the actual expenditure by the state, but the representative expenditure had the state spent \$1 for each “representative” Medicaid client—a composite of the factors outlined in Appendix Table 6.

The workload factor is the share of each state’s Unit Medicaid Expenditure in the national Unit Medicaid Expenditure.

v) Health and Hospitals

Sources:

U.S. Census Bureau, *State Population Estimates. State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2006 - CIVILIAN*

http://www.census.gov/popest/states/asrh/files/SC_EST2006_AGESEX_CIV.csv

American Community Survey, 2006: **Table B19081: Mean Household Income by Quintile, By State, 2005**

United Health Foundation, *America’s Health Rankings*, 2006, p.112. **Table 37—Years of Productive Life Lost per 100,000 population**, and, p.88 for District’s Data.

<http://www.unitedhealthfoundation.org/ahr2006/media2006/shrmediakit/2006ahr.pdf>

Methodology:

The workload factor is the weighted average of three measures: share in national population, share in the income generated by the low income households, and share in the number of productive years lost.

Population share calculation is the share of each state's population in the national population.

Income generated by low income households is a proxy for poverty: It is the product of each state's population share and an index of income among the bottom fourth and fifth quintiles. The household income quintiles are calculated using the public use micro-data files from the American Community Survey.

In this study, we introduce a new variable to capture the general well-being of states' populations. This variable is Years of Productive Life Lost. GAO recommended the use of this figure as a means for targeting federal health sector aid to states in a 1996 study.³¹

The workload measure is the equally weighted average of state's share of total population, state's in national total of the Years of Productive Life List, and state's share of low-income families.

vi) Highways

Sources:

Federal Highway Administration, *Highways Statistic, 2004*. **Table VM-2M: Vehicle-miles of travel, by functional system** <http://www.fhwa.dot.gov/policy/ohim/hs04/xls/vm2.xls>

Federal Highway Administration, *Highways Statistic, 2005*. **Table VM-2M: Vehicle-miles of travel, by functional system** <http://www.fhwa.dot.gov/policy/ohim/hs05/xls/vm2.xls>

Federal Highway Administration, *Highways Statistics 2004*. **Table HM-60: Rural and urban lane-miles, estimated.** <http://www.fhwa.dot.gov/policy/ohim/hs04/xls/hm60.xls>

Federal Highway Administration, *Highways Statistics 2005*. **Table HM-60: Rural and urban lane-miles, estimated.** <http://www.fhwa.dot.gov/policy/ohim/hs05/xls/hm60.xls>

Methodology:

Workload measure equals 0.825 times state's share of vehicle-miles plus 0.175 times state's share of lane-mileage. These weightings are based on the GAO Report Cited in Rafuse study.

vii) Police and Corrections

Sources

U.S. Census Bureau, *State Population Estimates. State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2006 - CIVILIAN* http://www.census.gov/popest/states/asrh/files/SC_EST2006_AGESEX_CIV.csv

U.S. Department of Justice, Federal Bureau of Investigation: *Crime in the United States 2004*

³¹ GAO. Report to the Chairman, Committee on Labor and Human Resources, U.S. Senate. PUBLIC HEALTH. A Health Status Indicator for Targeting Federal Aid to States. November 1996 <http://www.gao.gov/archive/1997/he97013.pdf>, Accessed on October 26, 2007.

Table 5: Index of Crime, by state http://www.fbi.gov/ucr/cius_04/documents/04tbl05a.xls

U.S. Department of Justice, Federal Bureau of Investigation: *Crime in the United States 2004*
Table 5: Index of Crime, by state <http://www.fbi.gov/ucr/05cius/data/documents/05tbl05.xls>

French, M.T., McCollister, K.E., and Reznik, D. "The Cost of Crime to Society: New Crime-Specific Estimates for Policy and Program Evaluation." Manuscript.
<http://tresearch.org/resources/AHSRPresentations/McCollister.ppt>

Cohen, Mark A. (2001) 'Measuring the costs and benefits of crime and justice', in volume 4: *Measurement and Analysis of Crime and Justice* pp.263-316 Criminal Justice 2000. National Institute of Justice (July 2000) NCJ 182411, accessed at:
http://www.ncjrs.org/criminal_justice2000/vol_4/04f.pdf

Methodology:

Workload measure is the equally weighted average of state's share of total population, state's share of population aged 18-24, and state's share in total public costs related to crime.

The public cost calculations use for each type of crime (murder, rape, robbery, aggravated assault, burglary, larceny, and motor vehicle theft) is the costs involving the police and the criminal system as well as the costs of social and post-victimization services. Each crime incidence is multiplied by the public cost component. The sum of these costs is the full measure of the public costs of crime. The costs are "average" costs that are estimated for the entire nation.

viii) Other Categories of Expenditures: Environment and Housing, Interest on General Debt, Governmental Administration, and All Other Direct General Expenditures

Methodology:

Workload Measure is state's share of total 2002 U.S. population.

ix) Interest on General Debt

The workload measure is the average of the workload measures calculated for each of the items above.

Appendix 5 - Supporting Tables

Appendix Table 6- Representative Revenue System, US, FY 2005

Revenue Source	State and Local Revenue Collections	Percent of Total	Standard Base (billions)*	Representative Rate	
General Sales/Gross Receipts	\$262.95	16.59%	3,992.55	¢6.59	per dollar
Selective Sales	\$106.03	6.69%			
<i>Motor Fuel</i>	\$35.77	2.26%	175.89	¢20.34	per gallon
<i>Public Utilities</i>	\$22.55	1.42%	B 629.84	¢3.58	per dollar
<i>Insurance</i>	\$14.89	0.94%	1,059.02	¢1.41	per dollar
<i>Tobacco</i>	\$13.34	0.84%	18.72	¢71.26	per package
<i>Alcoholic Beverages</i>	\$13.58	0.86%	0.53	\$25.79	per gallon
Distilled Spirits	\$5.70	0.36%	0.16	\$35.75	per gallon
Beer	\$6.20	0.39%	0.30	\$20.91	per gallon
Wine	\$1.68	0.11%	0.07	\$23.94	per gallon
<i>Amusement</i>	\$5.54	0.35%	151.20	¢3.66	per dollar
<i>Pari-mutuels</i>	\$0.37	0.02%	16.72	¢2.20	per dollar
License Taxes	\$30.30	1.91%	487.79	\$16.10	per license
<i>Motor Vehicles</i>	\$19.65	1.24%	238.90	\$66.29	Per license
<i>Vehicle Operators</i>	\$2.12	0.13%	199.75	\$7.14	Per license
<i>Corporate Licenses</i>	\$7.26	0.46%	6.09	\$1,191.71	Per license
<i>Fishing & Hunting</i>	\$1.26	0.08%	43.04	\$29.35	per license
Personal Income Tax	\$240.93	15.20%	6,326.15	¢3.81	per dollar
Corporate Income Tax	\$43.14	2.72%	1,186.34	¢3.64	per dollar
Property Tax	\$335.68	21.18%	25,202.22	¢1.33	per dollar
Death and Gift Taxes	\$5.42	0.34%	24.48	¢22.16	per dollar
Severance Taxes	\$8.18	0.52 %	217.33	¢3.76	per dollar
Other Taxes	\$72.18	4.55%	9,975.38	¢0.72	per dollar
User Charges & Nontax Rev.	\$480.09	30.29%	20,000.54	¢2.40	per dollar
<i>Lotteries</i>	\$18.43	1.16%	49.78	¢37. ¢03	per dollar
<i>General User Charges</i>	\$308.25	19.45%	9,975.38	¢3.0¢9	per dollar
<i>Other Non-tax Revenues</i>	\$153.40	9.68%	9,975.38	1.54¢	per dollar
Total Revenues	\$1,584.90	100%			

*The tax base value is expressed in the applicable units. For ad valorem taxes, this value is dollars; for excise taxes issued per unit sold the base is measured in kind.

Appendix Table 7- Revenue Capacity and actual revenues, levels and state rankings, US, FY 2005

State	Revenue Capacity	% of benchmark	Rank	Per Capita Revenue	% of capacity	Rank
United States	\$5,345	100	.	\$5,345	100	.
Alabama	\$4,409	82	44	\$4,458	101	23
Alaska	\$7,061	132	4	\$10,952	155	1
Arizona	\$4,762	89	37	\$4,308	90	44
Arkansas	\$4,164	78	49	\$4,217	101	22
California	\$6,023	113	10	\$5,946	99	28
Colorado	\$5,899	110	14	\$5,264	89	46
Connecticut	\$7,214	135	3	\$6,630	92	42
Delaware	\$6,581	123	7	\$6,137	93	38
District of Columbia	\$8,621	161	1	\$9,198	107	14
Florida	\$5,498	103	18	\$5,105	93	39
Georgia	\$4,749	89	38	\$4,356	92	43
Hawaii	\$5,933	111	12	\$5,980	101	24
Idaho	\$4,403	82	45	\$4,507	102	19
Illinois	\$5,441	102	20	\$5,118	94	37
Indiana	\$4,844	91	34	\$5,103	105	15
Iowa	\$5,024	94	29	\$5,097	101	21
Kansas	\$4,892	92	33	\$4,869	100	25
Kentucky	\$4,451	83	42	\$4,254	96	34
Louisiana	\$4,211	79	48	\$4,900	116	5
Maine	\$5,028	94	28	\$5,522	110	8
Maryland	\$5,976	112	11	\$5,680	95	35
Massachusetts	\$7,258	136	2	\$6,150	85	49
Michigan	\$5,044	94	26	\$5,253	104	18
Minnesota	\$5,901	110	13	\$5,854	99	27
Mississippi	\$3,788	71	51	\$4,092	108	12
Missouri	\$4,900	92	32	\$4,382	89	45
Montana	\$4,920	92	31	\$4,529	92	40
Nebraska	\$5,014	94	30	\$5,451	109	10
Nevada	\$6,355	119	9	\$5,460	86	48
New Hampshire	\$6,551	123	8	\$4,749	72	51
New Jersey	\$6,587	123	6	\$6,448	98	31
New Mexico	\$4,538	85	41	\$5,061	112	6
New York	\$5,882	110	15	\$7,531	128	2
North Carolina	\$4,704	88	39	\$4,615	98	30
North Dakota	\$5,190	97	22	\$5,110	98	29
Ohio	\$4,827	90	35	\$5,247	109	9
Oklahoma	\$4,448	83	43	\$4,310	97	32
Oregon	\$5,156	96	23	\$4,969	96	33
Pennsylvania	\$5,031	94	27	\$5,244	104	17
Rhode Island	\$5,609	105	17	\$5,692	101	20
South Carolina	\$4,390	82	46	\$4,845	110	7
South Dakota	\$5,073	95	25	\$4,086	81	50
Tennessee	\$4,637	87	40	\$4,135	89	47
Texas	\$4,791	90	36	\$4,524	94	36
Utah	\$4,374	82	47	\$4,750	109	11
Vermont	\$5,296	99	21	\$5,669	107	13
Virginia	\$5,856	110	16	\$5,386	92	41
Washington	\$5,467	102	19	\$5,425	99	26
West Virginia	\$3,965	74	50	\$4,871	123	3
Wisconsin	\$5,099	95	24	\$5,360	105	16
Wyoming	\$6,885	129	5	\$8,412	122	4

Appendix Table 8- Revenue Capacity and actual revenues, levels and state rankings, US, FY 2005

State	Expenditure Need	% of benchmark	Rank	Actual Expenditure	% of need	Rank
United States	\$6,778	100	.	\$6,778	100.00	.
Alabama	\$6,385	94	44	\$6,382	100	26
Alaska	\$7,423	110	4	\$13,261	179	1
Arizona	\$6,879	101	37	\$5,531	80	51
Arkansas	\$6,141	91	49	\$5,586	91	41
California	\$8,283	122	10	\$7,626	92	37
Colorado	\$6,757	100	14	\$6,217	92	38
Connecticut	\$6,763	100	3	\$7,488	111	16
Delaware	\$6,201	91	7	\$8,105	131	5
District of Columbia	\$8,905	131	1	\$12,446	140	3
Florida	\$6,349	94	18	\$6,339	100	27
Georgia	\$6,788	100	38	\$5,552	82	50
Hawaii	\$6,270	93	12	\$7,327	117	8
Idaho	\$6,321	93	45	\$5,640	89	46
Illinois	\$6,652	98	20	\$6,444	97	33
Indiana	\$6,176	91	34	\$6,096	99	32
Iowa	\$5,889	87	29	\$6,561	111	15
Kansas	\$6,184	91	33	\$6,112	99	30
Kentucky	\$6,249	92	42	\$5,618	90	44
Louisiana	\$6,343	94	48	\$6,329	100	29
Maine	\$5,853	86	28	\$7,216	123	7
Maryland	\$6,639	98	11	\$6,558	99	31
Massachusetts	\$7,151	106	2	\$7,731	108	19
Michigan	\$7,003	103	26	\$6,644	95	35
Minnesota	\$6,366	94	13	\$7,414	116	9
Mississippi	\$6,836	101	51	\$6,136	90	45
Missouri	\$6,169	91	32	\$5,625	91	40
Montana	\$6,158	91	31	\$6,148	100	28
Nebraska	\$5,996	88	30	\$6,236	104	20
Nevada	\$6,741	99	9	\$6,191	92	39
New Hampshire	\$5,859	86	8	\$5,995	102	25
New Jersey	\$6,655	98	6	\$7,582	114	10
New Mexico	\$7,114	105	41	\$7,317	103	24
New York	\$7,270	107	15	\$9,532	131	4
North Carolina	\$6,462	95	39	\$6,065	94	36
North Dakota	\$6,294	93	22	\$6,854	109	18
Ohio	\$6,179	91	35	\$6,794	110	17
Oklahoma	\$6,298	93	43	\$5,385	85	48
Oregon	\$6,311	93	23	\$6,520	103	23
Pennsylvania	\$6,166	91	27	\$6,957	113	11
Rhode Island	\$6,672	98	17	\$7,492	112	12
South Carolina	\$5,910	87	46	\$6,593	112	13
South Dakota	\$6,355	94	25	\$5,738	90	43
Tennessee	\$6,270	93	40	\$5,691	91	42
Texas	\$6,980	103	36	\$5,728	82	49
Utah	\$6,559	97	47	\$5,831	89	47
Vermont	\$5,991	88	21	\$7,598	127	6
Virginia	\$6,372	94	16	\$6,161	97	34
Washington	\$6,788	100	19	\$7,050	104	21
West Virginia	\$5,915	87	50	\$6,124	104	22
Wisconsin	\$6,124	90	24	\$6,825	111	14
Wyoming	\$6,185	91	5	\$9,979	161	2

State	Fiscal Capacity (Revenue Capacity Relative to Expenditure Need)	RANK	Per Capita Fiscal Gap At Capacity (revenue Capacity – expenditure Need)	Rank	Per Capita Intergovernmen tal Transfers
United States	100	.	-\$1,432		\$1,478
Alabama	88	44	-\$1,976	10	\$1,635
Alaska	121	8	-\$362	43	\$3,850
Arizona	88	43	-\$2,116	7	\$1,384
Arkansas	86	46	-\$1,977	9	\$1,563
California	92	37	-\$2,260	3	\$1,510
Colorado	111	15	-\$858	35	\$1,094
Connecticut	135	3	\$450	49	\$1,271
Delaware	135	4	\$380	48	\$1,407
District of Columbia	123	7	-\$284	45	\$4,836
Florida	110	16	-\$851	36	\$1,187
Georgia	89	41	-\$2,039	8	\$1,158
Hawaii	120	9	-\$337	44	\$1,543
Idaho	88	42	-\$1,918	13	\$1,313
Illinois	104	23	-\$1,210	27	\$1,205
Indiana	99	32	-\$1,332	21	\$1,148
Iowa	108	18	-\$865	34	\$1,477
Kansas	100	31	-\$1,292	23	\$1,238
Kentucky	90	39	-\$1,798	15	\$1,466
Louisiana	84	49	-\$2,131	6	\$1,741
Maine	109	17	-\$825	37	\$2,008
Maryland	114	13	-\$663	39	\$1,349
Massachusetts	129	5	\$107	47	\$1,430
Michigan	91	38	-\$1,958	11	\$1,405
Minnesota	118	11	-\$466	41	\$1,425
Mississippi	70	51	-\$3,049	1	\$2,058
Missouri	101	30	-\$1,269	25	\$1,479
Montana	101	28	-\$1,237	26	\$2,143
Nebraska	106	20	-\$982	33	\$1,518
Nevada	120	10	-\$386	42	\$929
New Hampshire	142	1	\$693	50	\$1,244
New Jersey	126	6	-\$68	46	\$1,221
New Mexico	81	50	-\$2,577	2	\$2,211
New York	103	26	-\$1,389	19	\$2,366
North Carolina	92	36	-\$1,758	16	\$1,507
North Dakota	105	22	-\$1,104	30	\$2,066
Ohio	99	33	-\$1,352	20	\$1,498
Oklahoma	90	40	-\$1,851	14	\$1,462
Oregon	104	24	-\$1,155	28	\$1,445
Pennsylvania	103	25	-\$1,135	29	\$1,552
Rhode Island	107	19	-\$1,063	31	\$1,962
South Carolina	94	34	-\$1,520	18	\$1,672
South Dakota	101	29	-\$1,282	24	\$1,768
Tennessee	94	35	-\$1,633	17	\$1,523
Texas	87	45	-\$2,189	4	\$1,263
Utah	85	48	-\$2,185	5	\$1,293
Vermont	112	14	-\$695	38	\$2,110
Virginia	117	12	-\$516	40	\$917
Washington	102	27	-\$1,321	22	\$1,325
West Virginia	85	47	-\$1,950	12	\$1,952
Wisconsin	106	21	-\$1,025	32	\$1,285
Wyoming	141	2	\$700	51	\$5,374