

SETTING THE RECORD STRAIGHT:

**THE MODEST EFFECT OF ECOMMERCE
ON STATE AND LOCAL SALES TAX COLLECTIONS**

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Summary

A frequently cited academic study underestimates the amount of state and local tax currently collected on ecommerce sales by as much as a factor of ten. Published in 2000 and revised in 2001 by University of Tennessee researchers, both versions of the study are based on stale data and, at least in hindsight, flawed assumptions. Yet both versions still are referenced in news articles and elsewhere.

Among other shortcomings, the Tennessee study (1) overestimates total ecommerce sales; (2) underestimates B2B tax compliance; and (3) inadequately accounts for sales by multi-channel B2C sellers. The present paper corrects these errors and provides a far more realistic, updated assessment of tax collections on ecommerce sales. For example, in 2006, the total uncollected tax on ecommerce was only \$4.2B nationwide or about 0.2% of estimated total state and local tax revenue of \$2.12 trillion for 2006.¹ This is less than a tenth of what Tennessee estimated in 2000 and less than a quarter of their 2001 revised estimate.

Beyond these errors, the Tennessee study ignores the effects of three additional factors that could dramatically reduce the sales tax revenues available to state and local governments. The first factor is whether Congress or the Supreme Court ever would allow states participating in the Streamlined Sales Tax Project ("SSTP") to require tax collection by businesses in states not participating. Because, at present, states with well over two thirds of the population are *not* fully participating, it can be assumed that no more than a third of potential new revenue actually is available. Applied to the 2006 \$4.2B figure, the amount actually available to state and local revenues would have been only \$0.78B, or a tiny fraction – 0.00037 (or 0.037%) – of total tax revenue.

The two other factors ignored in the Tennessee study involve policy proposals to exempt some vendors from collection requirements and to provide collection compensation to other vendors. Because the SSTP has failed to quantify the potentially large effects of these proposals, no attempt is made to quantify them here. But if any seller exception or vendor compensation is provided, there *must* be a reduction of revenue available to the states and localities; the only question is by how much the Tennessee study errs by not considering these factors.

In sum, when properly measured with updated data, the effect of uncollected sales taxes is far more modest than the gaping losses forecast by Tennessee early this decade, and any hopes that increased ecommerce tax collections will significantly fortify state and local government treasuries are illusory, at best.

I. TOTAL ECOMMERCE SALES

¹ Projection for 2006 based on actual \$2.02 trillion for 2005 as reported by U.S. Census Bureau, Annual Survey of State and Local Government Finances (01-Jun-07).

Contrary to predictions made in the Tennessee study and elsewhere earlier this decade, ecommerce sales remain a small part of the US economy. As shown in Table 1, in 2005 total ecommerce (excluding services) represented less than 10% of total US commerce. The low portion of US economic activity attributable to ecommerce in the middle of the decade is reflected in a compound annual growth rate ("CAGR") for all ecommerce (B2B and B2C) much lower than that envisioned by Forrester Research and others for this period; it actually was only 17.2% for 2002-05, while the CAGR for B2C alone over the same period was 27.4%.

Table 1: Actual and Projected E-commerce Growth, 2005 – 08 (\$billions)

	Actual	Projected		
	2005	2006	2007	2008
Total US Commerce	\$ 19,589.0	\$21,061.0	\$22,531.5	\$ 24,002.0
All Ecommerce (Net of Services)	\$ 1,834.0	\$ 2,149.5	\$ 2,518.7	\$ 2,952.7
Ecommerce as % of total:	9.4%	10.2%	11.2%	12.3%
Of Which:				
B2B Ecommerce	\$ 1,741.0	\$ 2,035.5	\$ 2,381.8	\$ 2,789.1
B2C Ecommerce	\$ 93.0	\$ 114.0	\$ 136.9	\$ 163.6

Source: US Dept of Commerce Census Bureau E-Commerce Report 2007; authors' projections based on historical data Bruce, Donald and William F. Fox (2001): "State and Local Sales Tax Revenue Losses from E-Commerce: Updated Estimates." Center for Business and Economic Research, University of Tennessee.

The Tennessee study, however, accepted Forrester's far higher growth rates (42.1% and 38.1% for total and solely B2C ecommerce, respectively, for 2002 -2005) and has not corrected them fully since that time. Thus it significantly overestimated sales and predicted much higher than actual available tax revenues. Moreover, the growth rate of ecommerce continues to slow faster than the Tennessee study forecast.

Table 2: Comparison of Projected Ecommerce Growth Rates

2002 - 05 CAGR	U of T	Actual
All Ecommerce	42.1%	17.8%
B2B Ecommerce	42.4%	16.7%
B2C Ecommerce	38.1%	27.4%

Source: Bruce and Fox, 2001; US Dept of Commerce Census Bureau E-Commerce Report 2007; authors' projections based on historical data

II. B2B TAX EXEMPTION AND COMPLIANCE

The Tennessee study significantly underestimated both the B2B share of total ecommerce and the tax compliance rate for B2B sales in total ecommerce and, as a result, systematically underestimated the amount of sales/use taxes already collected.

There are two basic types of B2B ecommerce. One type is that conducted via closed Electronic Data Interchange (EDI) networks of mainframe computers. EDI accounts for a whopping 88% of all ecommerce transactions. These closed networks are used for transactions in the manufacturing process. The majority of goods involved are not subject to sales or use tax; for those that are, the proprietary nature of these systems means remote sellers who participate automatically incur nexus, making the tax compliance rate on EDI sales effectively 100%.

The other type of B2B ecommerce is that conducted via the Internet. The US Government's 2000 GAO report on ecommerce surveyed the literature on estimated use tax compliance on B2B sales, noting that credible estimates ranged as high as nearly 100%, to figures somewhat higher than half that rate. The 65% used by the Tennessee researchers thus falls clearly towards the lower range of all percentages cited. The most thorough study was conducted by State of Washington's treasury department, and found that businesses remitted use tax at a rate in the middle of this range -- about 85%.

The reasons for high B2B tax collection compliance are straightforward. Businesses are much more likely than consumers to be audited, either by their own external auditors or by the government, and they usually enjoy significant economies of scale in record-keeping and tax-filing. Many also maintain complete accounting departments or employ professional bookkeepers.

Table 3 provides an updated and more accurate assessment of the size and composition of B2B sales within total ecommerce, and their impact on un-remitted use taxes. After carrying forward the total amount of B2B ecommerce sales in line 1, which is categorized somewhat differently from Department of Commerce data, treating services as B2B and excluding the "double-counting" of interplant transfers. This base was then used to ascertain the amount exempt arising from original manufacturing or services in line 2 (recognizing that use and sales taxes are levied exclusively on end consumption) Line 3 reports the residual, taking the value of B 2B wholesale sales (again, net of inter-plant transfers without transfer of title.) We then exclude EDI sales, where, as mentioned above, title is not taken or end consumption sales incur nexus when remote sellers use the purchaser's proprietary network. This exclusion together with auto sales (as requiring proof use tax compliance for registration purposes) yields the amount of B2B Internet commerce (line 6) which is adjusted to exclude sales in states where there is no sales tax (line 7).

Finally, in lines 8 and 10, we accept the University of Tennessee's 6.4% average state and local sales tax rate, and use the State of Washington's estimate of 85% compliance, as the most credible estimate currently available in the literature.² These yield the total tax liability and ascertain the portion which is remitted by purchasers, leaving the actual value which could accrue to states in line 12.

² General Accounting Office (2000), *Sales Taxes -- Electronic Commerce Growth Presents Challenges: Revenue Losses Are Uncertain*.

Table 3: Calculation of Unremitted Tax from B2B Ecommerce

		Actual	Projected		
		2005	2006	2007	2008
1	Total B2B Ecommerce				
2	Of which: Exempt B2B Ecommerce				
3	B2B non-exempt Ecommerce	\$ 410.0	\$ 529.5	\$ 590.1	\$ 657.8
4	Of which: EDI Sales	\$ 281.0	\$ 358.9	\$ 400.1	\$ 445.9
5	B2B Internet Auto Sales **	\$ 67.0	\$ 85.8	\$ 95.7	\$ 106.6
6	Remaining B2B Internet Sales	\$ 62.0	\$ 84.7	\$ 94.4	\$ 105.2
7	Other Internet B2B in Sales Tax States	\$ 60.5	\$ 82.6	\$ 92.1	\$ 102.6
8	Average sales tax rate: 6.4%				
9	Sales Tax Incurred	\$ 3.87	\$ 5.29	\$ 5.89	\$ 6.57
10	B2B Compliance Rate	85%			
11	Taxes Remitted By B2B Purchasers	\$ 3.3	\$ 4.5	\$ 5.0	\$ 5.6
12	B2B Taxes Unremitted By Purchasers	\$ 0.6	\$ 0.8	\$ 0.9	\$ 1.0

* States impose taxes almost exclusively on goods that represent final demand, i.e. are for final use by the end-purchaser. Thus, goods sold by manufacturers to other manufacturers or to wholesalers who do not take title can normally be regarded as entirely tax exempt. Similarly, sales by do not normally involve goods, and so the value of transactions in this category can also be treated as tax exempt for both sales and use taxes. For all these reasons, sales and use taxes fall on only a small portion of business to business sales.

** Tax compliance for auto sales is practically 100% because of vehicle registration requirements.

Source: US Dept of Commerce Census Bureau E-Commerce Report 2007; authors' projections based on historical growth rates for prior three years

III. B2C SALES: THE IMPACT OF MULTICHANNEL SELLERS

Not only did the Tennessee study greatly understate the proportion of sales arising from B2B ecommerce, by the same token, it necessarily overstated the size and impact of B2C ecommerce. But even correcting for the proper volume of B2C ecommerce, as is done in Table 4, the Tennessee study greatly underestimated the proportion of ecommerce sales by multi-channel sellers, i.e., those with physical, as well as online, stores. There are two reasons why, at least in hindsight, the relevant Tennessee estimates are so flawed.

First, the so-called "dot-com bust" of early this decade put many of the then-new, pure-play online sellers out of business. At the time of the Tennessee study, the vast majority of online sales were by these newcomers. No longer is this true; as any examination of the Internet Retailer's annual listing of the top few hundred sellers online, only a handful are pure-play online operations, with this proportion dropping steadily, as more traditional brick and mortar retailers acquire a significant retail presence.

Second, and even more importantly, many of the largest and best-known offline retail stores had, at the time of the Tennessee study, established their online operations as separate subsidiaries in order to reposition themselves in the minds of investors interested in high-tech retailing. As a result, these retailers assumed that, as distinct legal entities with no integration into traditional retail networks, their online operations lacked sales tax nexus even in the states where the parent company had physical stores. Thus, they thought, they did not have an obligation to collect taxes on sales anywhere but where the online entity itself possessed a physical presence – such as its headquarters.

Within just a few years, however, many retailers began folding their online and offline together, and a tax amnesty deal was struck. Most of the top online stores now belong to retail giants, such as Wal-mart, and are collecting sales tax in all states where the parent has a physical store.

These two factors – the demise of the pure-play online sellers and rise of single-entity multi-channel retailers – have vastly increased B2C tax collection rates beyond what the Tennessee authors observed in the marketplace of in 2000-01. What is less defensible, of course, is that their estimates have not been updated to reflect these tectonic shifts. Table 4 summarizes the effect of these factors as well as the estimated effect of sales tax exemptions (for food, pharmaceuticals, children's' clothing) and sales of automobiles where remittance of use-tax is virtually 100%.

Table 4 follows a similar logic to that used above for B2B sales, with the exception that for B2C, the Census Bureau's retail e-commerce data is provided more frequently and is more up to date; and though lacking the greater detail of their annual survey data, can be used to validate actual top line values through 2006; component values are derived from annual reports as far as 2005 and are projected forward based on historical trends.

As with the B2B table, the calculation shown below excludes auto sales as automatically requiring proof of use tax compliance for the autos to be registered and used. Then, in line 6, we exclude some 10% of sales as un-taxed by states, accepting the rather conservative estimate by the Tennessee study. Then, in line 9, we exclude sellers with nexus, using a proportion derived from the E-Commerce reports' data on sales by non-store retailers vs. retailers with stores, even though many such non-store retailers actually have a multiple-jurisdiction retail presence – just not sufficient to be so categorized by the Census Bureau. A *de minimus* voluntary tax compliance rate of about 1% is applied to the value of sales tax incurred on these purchases.

Table 4: B2C Ecommerce

		Actual	Projected		
	B2C Ecommerce	2005	2006	2007	2008
1	Retail E-Commerce--All States	\$ 93.0	\$ 114.0	\$ 137.0	\$ 163.7
2	Auto Sales	\$ 17.0	\$ 22.0	\$ 27.9	\$ 35.2
3	Auto Sales Percent	18.3%	19.3%	20.4%	21.5%

4	Other Internet	\$ 76.0	\$ 92.0	\$ 109.1	\$ 128.5
5	Other Internet –Sales Tax States	\$ 74.1	\$ 89.7	\$ 106.4	\$ 125.3
6	% Exempt B2C Sales	10.4%	10.5%	10.6%	10.7%
7	Amt of Exempt B2C Sales	\$ 9.7	\$ 12.0	\$ 14.5	\$ 17.5
8	Non-Exempt B2C	\$ 64.4	\$ 77.7	\$ 91.9	\$ 107.8
9	Remote Sellers w/nexus	\$ 19.3	\$ 24.7	\$ 31.0	\$ 38.6
10	Pure play Remote Sellers	\$ 45.1	\$ 53.0	\$ 60.9	\$ 69.2
11	Average sales tax rate: 6.4%				
12	B2C Sales Tax Incurred	\$ 2.9	\$ 3.4	\$ 3.9	\$ 4.4
13	B2C Compliance Rate	0.75%	0.89%	1.02%	1.16%
14	Taxes Unremitted By Consumers	\$ 2.9	\$ 3.4	\$ 3.9	\$ 4.4

Source: US Dept of Commerce Census Bureau E-Commerce Report 2007; authors' projections based on historical data

IV. CONCLUSION

The 2000-01 Tennessee study vastly overstated currently uncollected sales/use tax revenue. As can be seen in Table 5, summing the calculations of B2B and B2C sales and taxes owed based upon the most comprehensive and up to date Department of Commerce data now indicate that nationwide only \$3.5 billion was likely still outstanding from remote sales in 2005, and that this amount will reach only \$4.8 billion in 2007, and \$5.4 billion in 2008.

Table 5: Total Unremitted tax on Ecommerce Sales (\$billions)

	2005	2006	2007	2008
B2B Taxes Uncollected	\$ 0.6	\$ 0.8	\$ 0.9	\$ 1.0
B2C Taxes Uncollected	\$ 2.9	\$ 3.4	\$ 3.9	\$ 4.4
Total Taxes Uncollected	\$ 3.5	\$ 4.2	\$ 4.8	\$ 5.4

Source: US Department of Commerce and Author's calculations, described herein.

As can further be seen from Table 6, these figures based on up to date Commerce Department data are but a fraction of the \$45 billion originally projected by the 2001 University of Tennessee study for 2006 – an amount that states still find it in their interest to cite, even though it was a figure the Tennessee authors subsequently revised downwards to \$19 billion – and even this amount we now recognize to be almost five times too high.³

Table 6: Comparison to 2000-01 Tennessee Studies

UNCOLLECTED ECOMMERCE SALES TAX	2006
Tennessee Study 2000 (based on Forrester Data)	\$45.4
Partially Corrected Tennessee Study 2001 (based on Forrester Data)	\$19.2
DMA Study 2007 (based on US Commerce Dept. Data)	\$4.2

Of course, states are less concerned with national totals than the amounts that would accrue to them. To see the relevant impact on individual states, Table 7 provides a side by side comparison of the estimated amounts of unremitted use tax, taking the totals from the original and partially corrected University of Tennessee studies, and the present analysis of Dept. of Commerce data, and apportioning to individual taxing states on the basis of state share of total US GDP.

³ Bruce and Fox (2001) p. 6

Table 7: State By State Comparison Of Unremitted Use Tax

State/Data Source	2006				
	State GDP as % of GDP for all Sales Tax States	Original University of Tennessee	Revised University of Tennessee	DMA Analysis of Census Bureau Data	If SSTA only/Join SSTA
Alabama	1.3%	\$604.3	\$256.67	\$56.15	\$12.05
Arkansas	1.1%	\$488.0	\$207.27	\$45.34	\$16.03
Arizona	1.8%	\$799.2	\$339.45	\$74.25	\$9.68
California	13.2%	\$5,952.0	\$2,528.04	\$553.01	\$134.91
Colorado	1.5%	\$686.4	\$291.54	\$63.77	\$13.77
Connecticut	1.4%	\$648.9	\$275.61	\$60.29	\$12.99
D.C.	0.3%	\$123.1	\$52.29	\$11.44	\$2.44
Florida	7.1%	\$3,214.0	\$1,365.11	\$298.62	\$66.92
Georgia	3.4%	\$1,517.8	\$644.67	\$141.02	\$30.79
Hawaii	0.8%	\$359.2	\$152.57	\$33.37	\$7.10
Iowa	0.8%	\$372.3	\$158.13	\$34.59	\$3.00
Idaho	0.3%	\$151.5	\$64.35	\$14.08	\$37.03
Illinois	4.0%	\$1,795.3	\$762.53	\$166.80	\$13.32
Indiana	1.6%	\$728.5	\$309.42	\$67.69	\$7.09
Kansas	1.0%	\$451.5	\$191.77	\$41.95	\$8.63
Kentucky	1.2%	\$535.5	\$227.45	\$49.75	\$10.11
Louisiana	2.2%	\$1,008.1	\$428.18	\$93.66	\$20.16
Massachusetts	1.5%	\$683.0	\$290.10	\$63.46	\$2.90
Maryland	1.5%	\$664.3	\$282.15	\$61.72	\$13.35
Maine	0.3%	\$146.4	\$62.18	\$13.60	\$13.81
Michigan	3.8%	\$1,696.2	\$720.44	\$157.60	\$29.70
Minnesota	2.0%	\$920.6	\$391.01	\$85.53	\$16.83
Missouri	2.0%	\$884.1	\$375.51	\$82.14	\$9.17
Mississippi	1.0%	\$462.8	\$196.57	\$43.00	\$17.72
North Carolina	2.2%	\$1,010.9	\$429.37	\$93.92	\$4.60
North Dakota	0.2%	\$87.6	\$37.21	\$8.14	\$8.78
Nebraska	0.5%	\$238.7	\$101.39	\$22.18	\$19.69
New Jersey	2.5%	\$1,150.0	\$488.45	\$106.85	\$8.72
New Mexico	1.0%	\$440.2	\$186.97	\$40.90	\$76.25
Nevada	1.0%	\$441.7	\$187.61	\$41.04	\$17.78
New York	7.9%	\$3,569.2	\$1,515.98	\$331.62	\$1.71
Ohio	3.3%	\$1,502.2	\$638.04	\$139.57	\$30.66
Oklahoma	1.5%	\$670.6	\$284.83	\$62.31	\$12.71
Pennsylvania	3.3%	\$1,503.4	\$638.55	\$139.68	\$30.81

Rhode Island	0.3%	\$124.5	\$52.88	\$11.57	\$2.42
South Carolina	1.2%	\$525.0	\$222.99	\$48.78	\$10.46
South Dakota	0.3%	\$133.4	\$56.66	\$12.39	\$2.61
Tennessee	2.7%	\$1,242.8	\$527.86	\$115.47	\$24.93
Texas	8.8%	\$3,957.0	\$1,680.69	\$367.65	\$84.81
Utah	0.8%	\$359.0	\$152.48	\$33.36	\$7.12
Virginia	1.8%	\$817.0	\$347.01	\$75.91	\$1.42
Vermont	0.2%	\$71.7	\$30.45	\$6.66	\$14.37
Washington	3.2%	\$1,427.3	\$606.23	\$132.61	\$28.75
Wisconsin	1.6%	\$721.5	\$306.45	\$67.04	\$4.51
West Virginia	0.5%	\$232.4	\$98.71	\$21.59	\$14.46
Wyoming	0.2%	\$85.2	\$36.19	\$7.92	\$1.68
TOTAL	100%	\$45,204.3	\$19,200	\$4,200.0	

It is also possible – though highly unlikely – that Congress might be persuaded to alter the law on nexus only for those states that are fully compliant with the State Streamlined Sales Tax Agreement (SSTA). Thus for comparative purposes, the last column of table 7 reports the portion of unremitted use tax accruing to states that are currently fully certified (2007) members of SSTA, or if they are not, the amount that would accrue if they were the next state to join this group. (Note: state values in this column assume each state was the incremental addition to the original SSTA members, so will not sum).