

**A CURRENT CALCULATION OF
UNCOLLECTED SALES TAX ARISING FROM INTERNET GROWTH**

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Executive Summary

Is there a large and growing amount of uncollected state sales tax arising from the growth of e-commerce, such that Congress must change the definition of nexus that has been in force since the Supreme Court's *Quill* decision?

This paper contends that the most widely cited projections that purport to answer this question are based on seriously flawed assumptions regarding the nature and growth rate of e-commerce. Consequently, if Congress were to change the definition of nexus as the states are likely to request, the states are likely to be seriously disappointed in the increase to state treasuries that would result.

Advocates of a change to the definition of nexus most frequently cite estimates by researchers at the University of Tennessee. Two University of Tennessee studies, authored in 2000 and 2001 using proprietary projections from the Forrester Research consulting group, estimate that uncollected sales tax from e-commerce and remote sales amounted to \$13 billion in 2001, and would rise to about \$55 billion in 2011.

By contrast, the analysis contained in this report is the first study to use survey data on the size and growth rate of e-commerce as measured by the US Department of Commerce's Census Bureau. It also focuses on the real impact of e-commerce on uncollected sales taxes, arguing that it is primarily the Internet's potential substitution of out-of-state sales for in-state sales that matter for the question of uncollected sales tax, and thus might warrant a change to the definition of nexus.

By employing Commerce Department data and focusing on Internet commerce -- where revenue-adverse effects are most likely to occur -- this study shows that uncollected sales tax arising from the Internet were, in all probability, much lower. For 2001, uncollected sales tax from the Internet amounted to about \$1.9 billion, and the projected uncollected sales tax in 2011 will not likely exceed \$4.5 billion, or less than 10 percent of the amount projected by the University of Tennessee study.

Given these revised calculations of Internet-driven uncollected sales tax, is changing the definition of nexus the fairest and most efficient way to recoup the remaining pool of uncollected use taxes? Scholars cited in this study have reported alternative, cost-effective approaches that appear to do quite well. Kentucky, for example, raised about \$12 million in self-reported use taxes from residents by simply making it a line on the state income tax form.

This study analyzes the nature, current size, and current growth rate of e-commerce because a coalition of state governments is requesting that Congress change the definition of nexus for inter-state commerce. Such a change in the definition of nexus would make it possible for states to require out-of-state sellers in the United States to collect their remote sales taxes ("use taxes") for all taxable transactions regardless of whether such sellers had a physical presence (physical nexus) in the taxing jurisdiction.

Central to the states' arguments on behalf of a widened definition of nexus is an alleged explosion in the dollar value of sales taxes lost due to the growth of e-commerce, both recently and over the next decade. The rise of the Internet, the states suggest, is rapidly diverting purchases from taxed "brick and mortar" retailers to untaxed "e-tailers."

However, as the following paper argues in detail, the Internet is not creating a massive leak in state coffers that could only be staunched by changing the definition of nexus. As most Americans are now aware, the Internet failed to fulfill many of the exaggerated hopes placed on it. When the University of Tennessee authors wrote their April 2000 study, the Internet bubble had not yet burst. Today, the dot.com boom has become a bust. Accordingly, policy makers should not be among the last to succumb to its rapidly vanishing allure. On the contrary, these authors' estimates of uncollected sales tax should be regarded with considerable skepticism -- a fact that can be understood by asking a series of basic questions.

1. How might e-commerce affect state sales tax collections?

Generally speaking, e-commerce might adversely affect states' tax revenues by making it easier to shift purchases from in-state vendors to out-of-state vendors where there is no nexus, or stimulate new purchases from such vendors. As these vendors lack physical nexus -- a substantial presence in the taxing jurisdiction -- the legal obligation to collect and remit any tax owed shifts to the purchaser. If, as the Tennessee authors maintain, all purchasers remit sales taxes to their states at a significantly lower rate than do vendors with nexus -- an assumption that overlooks the enormous differences between business and consumer purchasers -- an increase in the number of such transactions arising from the Internet could reduce the amount of sales tax accruing to the states.

2. What is the relevant universe of e-commerce transactions?

The Tennessee authors assume that the effects described above are synonymous with e-commerce, and that e-commerce is synonymous with the Internet. However, the supposition that e-commerce facilitates such substitutions depends on the absence of pre-existing incentives to move purchases across state lines, such as other electronic networks.

In B-to-B commerce, which plays a huge role in the Tennessee author's estimates, this is very far from being the case. For businesses, Electronic Data Interchange (EDI) preceded the Internet by several decades as the primary vehicle for B-to-B e-commercial ordering, invoicing, and remitting. Indeed, according to U.S. Department of Commerce reports, EDI and similar networks in 2000 accounted for 95 percent of the total value of manufacturers' shipments via e-commerce, while the Internet represented only 5 percent.

As this paper explains below, EDI e-commerce typically funnels purchases from a nation-wide supply chain of suppliers and sub-contractors to a single business purchaser (such as a Fortune 1000 manufacturer.) Despite being sourced nation-wide, these single-destination purchases present a comparatively simple use tax audit issue for the destination state. Although EDI transactions have been in place since the 1970s, this type of e-commerce transaction has never been shown to pose a threat of increased uncollected sales taxes that would require Congressional action to redefine nexus.

Therefore, studies of e-commerce's impact on future revenue losses that include B-to-B transactions, as the Tennessee authors do, must distinguish carefully between EDI based transactions and Internet based transactions. This study accordingly employs data from the Department of Commerce that nets out Internet from non-Internet sales, in order to avoid counting sales that already take place across state lines over EDI or similar networks, and are not relevant to any redefinition of nexus.

3. How big are Internet sales?

Data from the Department of Commerce distinguish Internet-driven sales in the B-to-B and B-to-C marketplaces more clearly than do the Forrester projections employed in the Tennessee studies. In contrast to the Tennessee estimates of \$126 billion total e-commerce in 1999 and \$282.7 billion in 2000 for B-to-B and B-to-C combined, the Department of Commerce reported totals of \$74.1 billion and \$88.6 billion, respectively, in Internet sales in those two years, for B-to-B and B-to-C combined. The failure of the Tennessee study to separate EDI from Internet sales within B-to-B is the principal explanation for its vast over-estimate of tax-relevant e-commerce transactions.

4. How fast is Internet commerce growing?

Just as the Tennessee study vastly over-estimated the size of Internet commerce, so too it relied on overly optimistic Internet bubble-era projections of e-commerce growth rates that are now very outdated. While the Tennessee studies project a compound annual e-commerce growth rate of 38 percent between 1999 and 2011, analysis of the most recent Commerce Department data projects a compound annual growth rate of a little below 13 percent over the same period, with somewhat lower growth rates in the large realm of B-to-B e-commerce. Here again, the prevalence of pre-existing networked relationships in the B-to-B world helps explain the lower rate of Internet growth, consistent with this economic data.

5. How much of Internet sales might cause uncollected sales tax?

Once one has determined the universe of Internet commerce, two further issues determine the amount of uncollected sales taxes. As the Tennessee authors point out,

these issues are the amount of sales exempt from taxation, and the amount of the balance that is remitted. Each of these issues plays out differently for businesses and consumers.

In the realm of B-to-B, this study accepts the University of Tennessee's proportions of B-to-B commerce that are exempt, although they probably understate these. However, in the area of voluntary compliance by business filers, the Tennessee studies' use of a weighted 65 percent compliance rate is inconsistent with much higher estimates of business compliance consistent with the role of EDI-based filing and auditing of large manufacturers. Although other studies suggest compliance rates of up to 100 percent for businesses, this study relies upon a weighted average of 85 percent.

In the area of retail Internet commerce, the Tennessee studies implicitly assume the continuation of late 1990s "pure-play" e-tailing. In fact, the future of Internet growth has been shown to be in multi-channel, clicks and bricks. As subsequent Forrester studies confirm, consumers' desire to couple "clicks"-based shopping with "bricks"-based merchandise pick-ups and returns increasingly entails physical nexus for sales tax collection purposes. This trend further reduces the pool of transactions that would be diverted to non-taxed sales by the Internet. This study makes a marginal upward adjustment in the Tennessee study's estimated collection rate to accommodate this changed marketing dynamic.

6. What are the final implications of Internet commerce for the definition of nexus?

Applying each of the steps above to the University of Tennessee studies substantially reduces their estimates of Internet-driven losses to state coffers. At \$4.5 billion in the year 2011, the most current calculation of uncollected tax from the Internet does not support the case that revenue losses are large and growing. On the contrary, the projections from the University of Tennessee study are substantially over-estimated, and appear to be based on a faulty understanding of the dynamics of e-commerce, especially in the realm of Business-to-Business transactions.

In fact, given that the vast majority of the University of Tennessee study's projected losses arise from B-to-B e-commerce shipments and sales, it certainly does not support the case that the only possible remedy for remote sales tax losses is to change the definition of nexus. If the states believe that businesses are not sufficiently in compliance on use taxes, they already have the authority to audit them more thoroughly, and without an act of Congress. Even in the realm of B-to-C e-commerce, where the effects of the Internet may be more pronounced, the revised calculations do not show that changing the definition of nexus is necessary.

Ultimately, however, the remaining definitional and measurement difficulties involved in estimating the amount of losses suffered by states from e-commerce are substantial, and argue against precipitous action. Further research into the different effects of the Internet on consumer and business tax behavior should be undertaken to more

precisely ascertain the likely future impact of the key variables affecting uncollected sales tax.

A CURRENT CALCULATION OF UNCOLLECTED STATE SALES TAX ARISING FROM INTERNET GROWTH

I. WHAT IS THE USE TAX ISSUE?

The question of the appropriate role of states in the taxing of inter-state commerce is as old as the Constitution. However, since states first began imposing sales taxes in the 1930s, this question has acquired an additional dimension in the form of the “use tax.” This little-known tax is now the subject of great controversy, as some believe e-commerce could make it a major source of revenue for state treasuries. To make it so, however, would require Congressional authorization.

Simply put, the use tax is a tax on out-of-state purchases that is equivalent to the amount of sales taxes that would have been paid if the same purchase had been made in state. The use tax was devised to get around interpretations of the Inter-state Commerce clause laid down by the Supreme Court, stipulating that states can legally compel only those vendors that have a physical presence in their jurisdictions to collect sales taxes. But while a tax on the “importation” of goods across state lines is not permissible, the courts permitted states to impose a tax on their residents’ “use” of such items once they are imported in an amount equivalent to the lost sales tax.¹

From an economic point of view, states impose use taxes to ensure that out of state vendors do not enjoy a competitive advantage over in-state vendors. All other things being equal, if there were no use tax, buyers at the margin might shift purchases from taxed in-state goods to untaxed out-of-state goods, entailing proportionate harms to in-state sales volumes and tax revenues, however minor.² Thus, the use tax nullifies, at the level of law, any economic advantage out-of-state sellers might otherwise enjoy.

It is important to bear in mind that thanks to the existence of the use tax, the legal tax burden on both in-state and out-of-state purchases is identical. The only point of difference is the identity of the remitting agent: the seller in the first case, the buyer in the second. If one were to assume full and equivalent efficiency of remittance between the two sets of economic agents (for example, 100 percent in a hypothetical economy of fully informed and spontaneously law-abiding consumers) there would be no economic distortion to trade flows and no loss to state treasuries.

The issue of relative efficiencies in remittances is the real driver of the use tax controversy. For, in the real world, the two sets of tax-remitting agents (sellers and buyers) almost certainly do not have equivalent efficiencies in tax yield. Proponents of changing nexus point out that while sellers must register with the state and can expect

¹ The same holds true, *mutatis mutandis*, for sub-state jurisdictions with their own sales tax, what is known as the local-option sales tax.

² Such an analysis, however, ignores the presence of shipping and handling costs for out of state purchases, which often exceed the combined 6.5 percent average state and local sales tax rate. Even without an obligation to collect tax, remote sellers have rarely enjoyed a price advantage.

to be audited, states have traditionally foregone comparable administrative oversight of consumers. Some additional percentage of those aware of the obligation would shirk it, in the belief that states do not or cannot enforce this obligation (or in the perception, as is often indeed the case, that states do not make it easy to voluntarily comply).

Of course, the hasty equating of “buyers” with consumers overlooks the fact that many purchases are made by businesses. These businesses, whether out of economies of scale in tax-filings -- or probability of being audited -- in fact remit the vast majority of use taxes currently collected. For example: both in the state of Tennessee, where there is no state income tax to facilitate use tax collections, and in the state of Maine, where the use tax line on the income tax form makes compliance for consumers comparatively easy, about 98 percent of all use taxes collected are voluntarily remitted by businesses in each state.³ While shares of the total amounts collected do not translate automatically into compliance rates, they do strongly corroborate the claims made by other authors that business use tax compliance rate is normally vastly higher than the rate for consumers.

Whether businesses or consumers ought to remit the use tax, however, is not the question; it is a question of whether they will do so based on knowledge and cost on the part of the purchaser (whether consumer or business) on the one hand, and administrative convenience and enforcement by the state on the other.

Nevertheless, given the difference in remitting agents for sales and use taxes, there is likely to be some shift in consumption patterns and tax revenues, however marginal. The point in question has always been the magnitude of such distortions, and what should be done to minimize them. Until now, states have chosen for reasons of politics and administrative convenience, not to collect use taxes directly from consumers even though they have full authority to do so. Instead, they have historically attempted to impose the burden of collecting such taxes on uncompensated and unrepresented out-of-state sellers and have intermittently petitioned the courts or Congress to change the definition of nexus to allow them to do so.

Throughout the history of the sales and use tax, the use tax has never accounted for more than a fraction of state revenues, either absolutely or relative to the sales tax.⁴ The reason for this is not the compliance issue, but rather the relatively small universe of taxable retail transactions that traditionally took place out of state, compared to those that took place in state.

³ Maine business and individual taxpayers voluntarily remitted \$75.6 million in use tax payments in 2001, of which \$74.2 million, or 98.1 percent came from businesses. In Tennessee, for FY 2002, businesses voluntarily remitted an estimated \$163,685,510 or 98.3 percent of a total \$166,458,810 in use tax payments, while consumers remitted only \$2,773,300, or 1.7 percent. Although this study did not survey all sales tax states, it believes these examples are probably representative. (Sources: Maine and Tennessee Departments of Revenue.)

⁴ The exception to this rule is the use tax or its equivalent levied on out-of-state motorized vehicle purchases, such as automobiles, and boats. As such goods must be licensed to be operated, states are usually able to seek confirmation of use tax payment. Compliance (or yield) is thus effectively 100 percent for these items.

“For the first 65 years of the use tax, the typical vendor was a mail-order catalog company, and purchasing goods from such a firm was cumbersome and slow, both in placing and receiving the order. As late as the mid-1980s the revenue loss from [consumers’ unremitted] use tax was modest.”⁵

The states were never able to demonstrate to the courts a large revenue loss or economic distortion arising from out-of-state sales. Even in the late 1990s, wrote this same scholar, “there was no evidence that state or local governments had experienced any serious reductions in their sales tax collections” arising from remote sales, on-line or otherwise.⁶

Because a redefinition of nexus could have sweeping and unpredictable consequences for inter-state commerce as a whole and impose large compliance burdens on remote sellers, a series of Supreme Court decisions, most notably *National Bellas Hess* (1967), established that only sellers with a physical nexus -- a substantial connection such as a store, warehouse, office, or agent -- in the taxing jurisdiction could be forced to collect taxes on behalf of the state.

Subsequently, in 1992, the Supreme Court’s *Quill* decision, while reaffirming that sales tax need only be collected in the event of physical nexus, broke with precedent to give future changes to the definition of nexus to Congress, not the Court. This directed the energies of those seeking to abolish the physical presence test to the halls of Congress. Although the *Quill* case gave Congress the authority to change the definition of nexus, Congress declined during the 1990s to alter the physical nexus interpretation in favor of a looser “economic” nexus rule as the states sought.

II. WHY NOW?

The use tax issue might have remained dormant, a minor addendum to the sales tax, had not the Internet boom created a perception of a radical “New Economy” with major new implications for states’ sales tax revenues. This led to increased political pressure from states on Congress to change the definition of nexus.

Beginning in the late 1990s, states began to claim that remote sales derived from e-commerce threatened a large and growing erosion of their sales tax base. They claimed this could only be remedied by widening their ability to collect use taxes from out-of-state e-sellers. The *Quill* case encouraged them to lobby Congress; the rise of the Internet gave them ammunition -- or so it seemed.

Central to the states’ arguments to Congress are claims regarding the amount of revenue that would be lost due to the growth of Internet sales. Today, the most frequently cited figures come from a number of studies conducted by researchers at the

⁵ Cornia (2002), p. 13

⁶ Cornia (2002) p. 13. See also Cline and Neubig, (1999), who make this point.

University of Tennessee.⁷ Their headline number is \$13 billion lost to state coffers in 2001 thanks to e-commerce. These authors further project that this number will grow to \$55 billion by 2011. The states claim that these large losses represent a real policy emergency for their treasuries, which Congress must act promptly to redress.

By contrast, this paper argues that the projections offered in evidence by the Tennessee studies are greatly over-stated. They create the impression of a windfall revenue increase to state coffers by recouping taxes on transactions diverted from taxed to untaxed sellers. In fact, as this paper will show, such diversion from taxed to untaxed sales is likely far smaller than they assume.

To a very considerable degree, the headline tax revenue loss projections are the last echo of the now burst Internet bubble. The Tennessee studies rely on Forrester Research's proprietary projections of e-commerce growth. Many of Forrester's studies were conducted in 1999 and 2000, the last years -- indeed, days -- of Internet exuberance.⁸ The Forrester/Tennessee studies project compound annual e-commerce growth of 38 percent -- numbers that Forrester subsequently revised downward substantially, but which are of course not reflected in the Tennessee projections.⁹

Yet as important as the over-estimation of the Internet's growth rate is to the excessive projections regarding online sales, a still more fundamental problem consists in defining the relevant universe of e-commerce. The Tennessee studies reflect dot.com bubble-era neglect of the definitional complexities underlying any effort to measure the extent and nature of e-commerce in the various sectors of the economy.

III. HOW DOES E-COMMERCE AFFECT SALES TAX REVENUES?

Generally speaking, e-commerce might adversely affect states' tax revenues by making it easier to shift purchases from in-state vendors to out-of-state vendors where there is no nexus, or stimulate new purchases from such vendors. As a secondary effect, e-commerce could also shift some purchases from out-of-state vendors who have nexus in the purchaser's state (and thus an obligation to collect sales taxes) to that vendor's "pure-play" dot.com subsidiary with no physical nexus and therefore no legal obligation to collect. (This phenomenon is rapidly disappearing, however, in favor of integrated "bricks and clicks" retailing -- see below.) As these vendors lack physical nexus -- a

⁷See the citations of their work in Cornia (2002), and GAO (2000).

⁸ Forrester's studies on e-commerce include Kasrel et al (April 1999); Williams, et al (September 1999); McQuivey et al (February 2000); and Nordan et al (April 2000). Owing to the lack of specificity in the Tennessee studies, it is difficult to ascertain which Forrester studies in particular were used. However, given the September 2001 publication date, it is unlikely that the Forrester research employed could have been conducted much later than spring of 2001.

⁹The Forrester projections used by the Tennessee authors originally forecast \$87.5 billion in B-to-C sales for 2002; Forrester now projects \$72.1 billion for that year. The corresponding decline for Forrester's 2005 projections is from \$230.6 billion to \$148.6 billion, a 35 percent reduction. See Carrie A. Johnson et al., "US eCommerce: The Next Five Years." Forrester, August 27, 2002.

substantial presence in the taxing jurisdiction -- the legal obligation to collect and remit any tax owed shifts to the purchaser.

If, as the Tennessee authors assume, all e-commerce purchasers remit sales taxes owed to their states at a substantially lower rate than do vendors with nexus, such Internet-driven transactions could reduce the amount of sales tax collected by states by shifting the obligation to remit sales taxes from high-yield vendors with nexus to lower-yield purchasers.

The Tennessee calculation includes both B-to-B and B-to-C e-commerce, and implicitly assumes -- without demonstration -- that the 1990s rise of the Internet implies an equivalent transformation in the proportion of inter-state sales for both areas commerce, to the disadvantage of sales tax revenues. However, this can only be true if the Internet causes both businesses and consumers to source their purchases from out-of-state vendors at a significantly higher rate than before. The Tennessee authors focused on the then-new concept of "e-commerce," without properly defining it or distinguishing it from pre-existing economic activity.

Yet if the real question for state treasuries is: what part of e-commerce --if any -- facilitates a new diversion of in-state sales to out-of-state sources, we must recognize that "e-commerce" means very different things in the worlds of B-to-B and B-to-C commerce.

A. Business-to-Business: EDI vs. Internet.

The University of Tennessee study, written as it was during the heady days of the dot.com boom, could perhaps be forgiven for not recognizing that for businesses, "e-commerce" was not synonymous with the Internet. For the long-established nation-wide supply-chains of B-to-B commerce, the desktop networked Internet primarily supplemented -- not supplanted -- a pre-existing electronic environment of telephones, faxes, and above all, a decades-old system of networked mainframes known as "Electronic Data Interchange" (EDI).

It is over EDI networks that businesses overwhelmingly transmit their purchase orders, invoices, and payments for the manufacturing supply chain that runs from primary extraction through refining and fabrication through final assembly and delivery. As EDI pre-dates the rise of the Internet, and holds significant advantages over it, EDI severely limits the Internet's potential to increase substitutions of inter-state for out-of-state sales among businesses.¹⁰

¹⁰ In point of fact, the major forces creating an inter-state market for business transactions are price, quality, and regularity of supply. These concerns originally owe much more to comparative advantages in labor costs, technology, or transportation than they do to incrementally lower "search costs" offered by digital networks. Technology and labor cost differentials, together with declining transportation costs, have been creating a national B-to-B marketplace ever since invention of the assembly line, if not the railroad. And for supply-chain transactions, the introduction of digital networks of all kinds probably

For most practical purposes, EDI made B-to-B commerce highly “wired” decades prior to the arrival of the Internet.¹¹ Originally designed during the era of mainframe computers, EDI is a North America-wide system of transmitting standardized documents between computers involved in the supply chain.¹² EDI began several decades ago among major Fortune 1000 industrial companies. It gained a significant boost from industry-wide standardization efforts in the 1970s. By the time the Internet came into widespread popular use a few years ago, it was estimated that some 80,000 firms throughout all sectors of the national business-to-business marketplace were already using EDI for their high-dollar value purchases and shipments.

EDI’s primary value lies in the security of communications over closed electronic hubs that link stable relationships, primarily between major manufacturers and their diffuse networks of sub-contractors and suppliers, known in EDI terminology as “trading partners.” Its purpose is to minimize the loss of time, security, and accuracy that arise from human data entry and re-entry on crucial documents such as purchase orders, invoices, and notices of remittance. As hundreds of billions of dollars of business processes take place over these hubs each year, security is at a premium. EDI’s closed architecture makes it less vulnerable to loss than is the Internet, whose “open” architecture entails increased risks of lost data and lost transactions. These factors, together with the large sunk costs in EDI’s proprietary hardware and software, mean the Internet will supplant existing e-commerce relationships only slowly, if at all. Indeed, some business processes currently conducted over the Internet may migrate to EDI as the latter’s roster of standardized business documents expands.¹³

Thus, the very great size of “e-commerce” in the B-to-B realm, now and in the future, depends only marginally on the arrival of the Internet. This is confirmed by Department of Commerce reports, which note that “the dominant position of B-to-B e-commerce...reflects the long-standing use of EDI in manufacturing and wholesale trade.”¹⁴

As the Internet does not represent a new departure in inter-state purchasing in the B-to-B realm, the Internet adds little if anything to decades old issues of inter-state sales monitoring, collecting, and compliance. On the contrary, the nature of purchasing by businesses over EDI networks is almost exactly the reverse of consumer purchasing over the Internet, and these differences matter for sales taxes.

represents a less significant decline in inter-state communication (search) costs than did the introduction of the telegraph and telephone.

¹¹ While EDI processes were originally based on dial-up connections, some now take advantage of Internet connections.

¹² The North American EDI uses standards from ANSI, while European manufacturers rely upon EDIFACT.

¹³ The state of Tennessee, for example, is currently using its Internet website to advertise its project for businesses to use EDI to remit taxes to the Department of Revenue.

¹⁴ US Census Bureau, *E-stats Bulletin*, 2002, p. 2

For the state in which the manufacturer is located, it is a relatively simple matter to audit and assess appropriate use taxes from EDI transactions. EDI purchases are overwhelmingly from a number of suppliers towards a single-end user, such as a Fortune 500 transportation equipment manufacturer. Such a manufacturer has a relatively simple task of tracking purchases for which it must remit use taxes, since it may have only one jurisdiction's tax rate to calculate, and one authority to remit to. Contrast this "centripetal" purchasing dynamic with the "centrifugal" dynamic of Internet retail transactions, where a pure-play e-tailer, with customers in all 50 states, might have to calculate sales taxes for up to 7600 different remote taxing jurisdictions, if the physical presence test of nexus were overturned.

It is not surprising, therefore, that the Tennessee study offers no evidence that either the Internet or "e-commerce" significantly alters the existing ratio of B-to-B intra-state to B-to-B inter-state sales, or shifts manufacturing supply purchases from vendors with nexus to dot.com subsidiaries without nexus. Their "evidence" of a use tax problem arising from e-commerce merely amounts to the unsubstantiated assertion that "there appears to be a feeling, at least among some tax payers that e-commerce transactions are free from sales and use taxes."¹⁵

If the question is not vaguely defined "taxpayers," but rather businesses, this needs reconsideration. As the states had not been able to show a lack of use tax compliance during the years when EDI B-to-B transactions were growing, this claim clearly can only apply -- if at all -- to the rather small universe of B-to-B e-commerce transactions that take place over the Internet, not EDI.

B. Business-to-Consumer

Obviously, however, in consumer sales, the arrival of the Internet does make a difference. Previous retail shopping was highly decentralized and had no electronic network beyond the telephone. Inter-state commerce primarily depended on the mails for catalog delivery and fulfillment. Thus, the relevant universe of B-to-C retail e-commerce effectively implies the Internet, since it is via the Internet that we are most likely to find revenue-adverse shifts from in-state to out-of-state B-to-C sales.

While it is generally appropriate to identify retail e-commerce with Business-to-Consumer Internet commerce in government data, it is important to remember one important caveat. Not all Internet B-to-C sales represent *new* remote sales. Given the existing universe of remote sales via catalog, telephone, and other direct marketing channels, a certain percentage of Internet sales in B-to-C retail e-commerce will be substitutes for these. Any estimate of *new* uncollected sales taxes arising from the Internet alone will therefore need to net out such substitutions for existing remote sales.

¹⁵ Bruce and Fox (2000), p. 7

IV. HOW BIG ARE INTERNET SALES?

This study is the first analysis of the Internet sales tax issue to take advantage of new data sets on e-commerce published by the Department of Commerce's Census Bureau. As recently as 2000, the US General Accounting Office lamented that these numbers were not yet available for its own investigation of this issue. As they noted, "little empirical data exist on the key factors needed to calculate the amount of sales and use tax revenues that state and local governments lose on Internet and other remote sales. What information does exist is often of unknown accuracy.... The [Census] Bureau has plans to produce comprehensive data on Internet sales based on its annual surveys of firms in the manufacturing, wholesale, retail, and other sectors, but much of these data will not be available until 2001."¹⁶

Given that Census Bureau data sets lay some time in the future, the Tennessee studies' reliance on proprietary projections from Forrester research was understandable, as the best data then available. But since the development of detailed data sets from the Census Bureau on e-commerce, the quality of our data has improved substantially. Today, the Tennessee measurements of e-commerce, based on dated Forrester projections, now appear to be highly problematic.

Thus, the recent availability of Commerce Department Census Bureau data provides an unprecedented opportunity to resolve some of the major empirical uncertainties that beset previous non-governmental estimates of the size of e-commerce.¹⁷ The Census Bureau now surveys hundreds of thousands of firms nationwide to establish a highly statistically valid picture of e-commerce utilization. On the B-to-C (retail) side in particular, its numbers are now up to date as of fourth quarter 2002. Given that Internet transactions are the issue for state revenues, the Department of Commerce statistics are especially useful in allowing us to distinguish pre-existing (EDI) networked transactions from "new economy" transactions over the Internet.

Accordingly, this study employs data from the Department of Commerce Census Bureau *E-stats Bulletins*. The Commerce Department reports two sets of numbers for B-to-B, namely total e-commerce shipments and manufacturers' wholesale e-commerce. Both of these numbers represent the value of e-commerce shipments and sales that take place over the Internet and proprietary Electronic Data Interchange and similar networks.

For its calculations, this study takes both sets of Commerce Department B-to-B data and adjusts this total universe of B-to-B e-commerce for the share accounted for by transactions over the Internet. To do so, one must first reduce the total value of e-commerce shipments for the 12 percent of shipments that are inter-plant shipments within the same firm, and then apply the respective percentages of Internet-driven transactions. For total e-commerce shipments for 2000, the Internet represented 5

¹⁶ GAO (2000), pp. 5-6.

¹⁷ This study refers to the "Department of Commerce" and the "Census Bureau" interchangeably.

percent,¹⁸ and in manufacturers wholesale sales, the Internet represented 12 percent.¹⁹ Summing the resulting two net amounts together yields the total of B-to-B Internet commerce that may represent new revenue-adverse substitutions. To this must then be added the amount of retail e-commerce transactions. Finally, as in the Tennessee studies, the total amount must then be adjusted downward to avoid counting sales in those 5 states without a sales tax

As can be seen from Table 1, the base of Internet e-commerce transactions in 2000 is considerably lower, at \$86.4 billion, than the \$282.7 billion reported by the University of Tennessee. The principal reason for this difference, as noted above, is the Tennessee study's inclusion of almost \$200 billion in EDI or other non-Internet sales that are not relevant to the question of nexus.

TABLE 1. Internet E-Commerce, Base Years 2000 and 2001. (Analysis of data from US Dept. of Commerce 2002 E-Stats Bulletin.) (\$ Billions.)

	2000	2001
Business-to-Business Internet Commerce		
1 Total Manufacturing Shipments--All E-Commerce	776.9	824.2
2 % Net of Inter-plant	0.88	0.88
3 Amount Net of Inter-plant	683.7	725.3
4 % Internet	0.05	0.05
5 Manufacturing Shipments--Internet Only	34.2	36.3
6 Merchant Wholesale Trade--All E-Commerce	212.8	243.1
7 % Internet	0.12	0.12
8 Merchant Wholesale Trade-Internet Only	25.5	29.2
9 Total B-to-B Internet Commerce--All States	59.7	65.4
10 Total B-to-B Internet Commerce--Sales Tax States	58.2	63.8
Business-to-Consumer Internet Commerce		
12 Retail E-Commerce--All States	28.9	35.9
13 Retail E-Commerce--Sales Tax States	28.2	35.0
Total Internet Commerce		
15 Total Internet Commerce--All States	88.6	101.4
16 Total Internet Commerce--Sales Tax States	86.4	98.8

V. HOW FAST IS INTERNET COMMERCE GROWING?

¹⁸ "Manufacturing plants primarily using EDI networks for accepting online orders accounted for two-thirds of e-commerce shipments of responding plants in mid-2000 while plants primarily using Internet networks accounted for only 5 percent of e-commerce shipments." *Census Bureau E-stats Bulletin* (March 2002) p. 2.

¹⁹ "EDI sales for merchant wholesalers...account for 88 percent of their e-commerce sales." *Census Bureau E-stats Bulletin* (March 2002) p. 2

The next issue is whether states are witnessing an explosive growth of e-commerce that is creating a policy emergency for their budgets. Simply put, the question is whether the Tennessee studies' universe of e-commerce transactions leads to inappropriate numbers regarding e-commerce growth.

Department of Commerce data create quite different pictures of the size of e-commerce and its likely growth rate than that offered by the University of Tennessee studies. Commerce Department data sets from 1999 and 2000 for B-to-B e-commerce, and data sets from 1999 through Q4 2002 for B-to-C e-commerce were used to generate baseline e-commerce sales figures for 2001 thru 2011 (B-to-B and B-to-C together) in the full table (see appendices), by fitting a trend line.²⁰

As can be seen in Table 2, these results are dramatically different from what the Tennessee authors used from Forrester. Commerce Department data project a compound annual growth rate for all Internet commerce of 12.5 percent and a B-to-B e-commerce growth rate of about 11 percent.

TABLE 2. Annual Growth Rates for Internet Commerce, 1999 - 2011 (Data Source: U.S. Department of Commerce)

	Business-to-Business Internet Commerce	
11	Compound Annual Growth Rate--1999-2011	10.76%
	Business-to-Consumer Internet Commerce	
14	Compound Annual Growth Rate--1999-2011	16.05%
	Total Internet Commerce	
17	Compound Annual Growth Rate--1999-2011	12.49%

This suggests that the Tennessee numbers regarding the size of e-commerce, already overly inclusive for 2000, are vastly overstated for 2011, at some \$6.1 trillion.²¹ Before even engaging the thorny issue of the taxable realm of e-commerce, there seems little question now that Internet growth rates simply are not what the Tennessee authors (and, frankly, everyone else) thought they were just three or four years ago.

If states therefore claim there is a policy emergency arising from the growth of e-commerce, the best available growth rate numbers (Census Bureau data from the Department of Commerce) show a very different picture.

²⁰This study's use of a linear trend line from the two peak years of Internet growth itself probably overstates the future growth rate of B-to-B Internet usage, as most industry experts expect recent but not yet reported growth rates to be lower.

²¹ One striking explanation for the extraordinarily high growth rate for B-to-B commerce in the Forrester projections relied upon by the Tennessee authors was Enron. According to Forrester's November 2001 study of B-to-B E-Commerce, Enron would account for approximately \$1 trillion in utility sales on-line, representing about one-fifth of total B-to-B e-commerce in 2006. (Forrester November 2001)

If there is a leak to state treasuries at all, it is growing only incrementally. As one e-commerce expert recently observed, “the idea of incremental change is not a sexy concept that can be hyped at every turn. But most experts likely would agree that low but stable growth rates are better for the economy than the wild highs and lows seen in recent years.”²² They also provide a more reasonable basis for evaluating tax policy.

VI. WHAT PART OF E-COMMERCE MATTERS FOR THE USE TAX?

As the Tennessee authors correctly point out, two issues matter in determining the amount of foregone revenue: the amount of sales exempt from taxation, and the amount of the balance that is remitted. Each of these issues plays out differently for businesses and consumers.

A. Business-to-Business

The Tennessee studies assert that 52 percent of e-commerce B-to-B sales are taxable, and claim 50 percent compliance for use tax remittances for non-vehicle purchases and 100 percent for vehicular purchases, resulting in a weighted compliance rate of 65.2 percent. Though this study makes no change to the proportion of exempt sales, and only moderate adjustments to the compliance figures used in the Tennessee studies, the actual taxable bases are likely smaller, and the compliance rates much higher, for the following reasons:

1. Exempt sales: In defining the relevant universe of taxable B-to-B transactions, it is important to recall the earlier point that a very large proportion of B-to-B shipments are not taxable at all as part of the manufacturing supply chain. Original Equipment Manufacturer (OEM) sales, together with inter-factory shipments within a single company, do not normally qualify as consumable goods, and are generally entitled to the manufacturing exemption from sales tax. B-to-B transactions in which the business is the end user, and thus is subject to sales tax, are likely to be found in the numbers for Internet transactions. This study accepts the Tennessee studies’ assumptions regarding the proportion of B-to-B transactions exempt from sales taxes, even though a greater percentage of supply-chain (exempt) sales are likely taking place over the Web than the Tennessee study acknowledges.
2. Compliance rates: The Tennessee studies make poorly substantiated assumptions regarding use tax compliance by businesses engaged in e-commerce. In their 2000 study they write, “use tax compliance is somewhat greater for businesses [than for consumers], but still falls far short of the legislated burdens.”²³ Yet as the Tennessee authors acknowledge, “no precise estimates are available on the extent to which use taxes are being paid on B-to-B transactions.”²⁴ Consequently, the methodology by which they arrived at their weighted average of 65 percent compliance for businesses

²²Quoted in Woods (2003)

²³ Bruce and Fox (2000)

²⁴ Bruce and Fox (2000) p. 10.

was highly unsystematic. It appears to be based simply on “suggestions” by an unknown number of state revenue officials that the “current average” was about 40 to 50 percent, with compliance higher for vehicle purchases requiring registry.²⁵

Yet this highly subjective assumption is at the lowest end of estimates cited in the literature on this issue. It is at variance with the effective 100 percent compliance rate for B-to-B compliance offered by some other state officials cited by the General Accounting Office, and the near 100 percent compliance cited in some expert testimony and academic literature.²⁶ It also appears to be unsupported by the ratios of voluntary use tax remittances by businesses reported by states.²⁷ Indeed, no evidence has been offered to show the states experienced an appreciable loss of tax revenues arising from inter-state business-to-business e-commerce transactions during the EDI era.

Given the preponderance of B-to-B sales in current and future e-commerce, a higher compliance rate consistent with the likelihood that businesses will be audited reduces the estimated sales tax loss. Although Cline and Neubig and Goolsby have cited figures of near 100 percent use tax compliance, this paper uses a more conservative weighted average of 85 percent, though even this number in all probability understates the compliance rate.

TABLE 3. Business-to-Business Exempt Sales and Sales Tax Collected, Selected Years. (Various data sources.)

	Description/Year	2001	2006	2011
	Less Exempt B-to-B			
18	% Exempt--Tennessee Estimate	0.40	0.59	0.63
19	Exempt B-to-B Internet Sales--Tennessee Estimate	25.2	67.5	113.8
	Less B-to-B Sales Tax Collected			
20	B-to-B Compliance Rate	0.85	0.85	0.85
21	B-to-B Sales Tax Collected	32.8	40.3	55.9

Although the typical 98 percent of use tax remittances derived from business sources strongly suggests a very high compliance rate, it is only appropriate to acknowledge that solid empirical research on the question of business use tax compliance rates remains to be done. Neither the Tennessee authors nor any other scholars appear to have moved beyond the level of educated guesswork on this issue.

²⁵ Bruce and Fox (2000), p. 10. Needless to say, whether state tax officials are disinterested observers on this point is open to question. A statewide “average” compliance rate would overlook the fact that compliance rates almost certainly increase with the size and value of purchases of the business, and the threat of being audited, to which large companies are more exposed.

²⁶ GAO (2000); Cline and Neubig (1999); Goolsby (1997).

²⁷ The collection rate on consumer purchases assumed by the University of Tennessee is 19 percent in the base year of 2001. Assuming this to be accurate, it is hard to see how businesses in the states of Maine and Tennessee, whose examples were cited above, could have a compliance rate only three times higher, when they remit about 50 times as much use tax.

Ultimately, however, if the states have reason to believe that businesses are not sufficiently in compliance, they have the authority under the existing definition of nexus to audit them more thoroughly. Indeed, at the end of the day, the question of B-to-B e-commerce and compliance rates may be irrelevant to the question of changing the definition of nexus, since the states currently have all the legal tools they need to make B-to-B use tax remittances comply with the law.

B. Business-to-Consumer

As noted earlier, the main issue in the emergence of the Internet remains B-to-C commerce. Only at the level of the consumer and his or her networked PC, does the Internet really offer a new substitution opportunity for inter-state sales to displace some intra-state sales, with possible negative consequences for state treasuries. Even here, however, the shifts are far less than what the Tennessee studies assume.

1. Exempt Sales: The Tennessee studies were written before it was clear that on-line retail sales were growing most strongly in a limited number of high-visibility niche areas -- many of which are exempt from sales taxes. This study consulted estimates of B-to-C e-commerce trends from Forrester research published subsequent to the Tennessee studies, from which this study estimated differentials in growth rates in various sectors of B-to-C e-commerce.²⁸ This paper adjusts the exemption upwards by one tenth of one-percent per year to account for this difference.

2. Compliance Rates: While compliance rates for B-to-C e-commerce use tax payments are probably significantly lower than in B-to-B, the compliance rate will probably actually be higher in the years to come than the Tennessee studies believe. The main reason for this is the demise of the pure-play “e-tailer” model in favor of “bricks and clicks” multi-channel marketing.

The misperception of a rush to substitute inter-state sales for instate sales arose for the same reason as the perception of growth in e-commerce generally. There was a failure to ask consumers “if they were going to make a mad dash to the Internet to buy items like dog food, plants, and furniture. As a result, many pure-play e-tailers selling such items ended up on the dot-com scrap heap. Demand simply did not materialize.”²⁹

Many firms that developed an on-line presence to substitute for their bricks and mortar businesses now find that e-commerce works best as a complement to bricks and mortar retailing. As more and more customers seek to browse and shop online AND pick-up and return merchandise offline, the strict legal wall of separation between dot.com and Main Street businesses must and will change.

²⁸ See Forrester (2002).

²⁹ Woods (2003).

Consequently, many former dot.coms are now collecting use tax, and many more are likely to do so in the years ahead.³⁰ This trend further reduces the amount of uncollected sales tax caused by the Internet. In as much as the “pure play” model of e-tailing is effectively in decline for all but a select number of highly visible niche companies, the issue of remote sales tax collection will essentially resolve itself as former pure-play e-tailers acquire physical nexus in the states in which they conduct business.

TABLE 4. Business-to-Consumer Exemptions and Collections, Selected Years. (\$ Billions)

Description/Year	2001	2006	2011
Less Exempt B-to-C			
22 % Exempt--Estimate From Forrester (2000) Projections	0.09	0.15	0.17
23 % Re-estimation From Forrester (2002) Projections	0.14	0.20	0.22
24 Exempt B-to-C Sales--Re-estimation	4.9	15.2	25.8
Less B-to-C On Which Tax Collected			
25 Base Collection Rate--Tennessee Studies	0.19	0.26	0.28
26 % Increase Arising from Physical Nexus Acquisition	0.01	0.04	0.06
27 Revised Collection Rate	0.20	0.29	0.34
28 B-to-C Sales Tax Collected	6.1	18.0	30.6

VII. WHAT ARE THE IMPLICATIONS FOR THE DEFINITION OF NEXUS?

This paper is not concerned with the economic or legal merits of sales and use taxes per se. It takes for granted that the affected parties should comply with sales and use taxes on the statute books. The question at stake in altering the definition of nexus is thus not, do remote sellers enjoy an unfair legal advantage? but rather, should remote sellers have imposed on them an unfair legal burden? Only evidence of a large and rapidly growing substitution between in-state and out of state trade, and an absence of alternative remedies, should justify such a burden.

³⁰ Krebs (2003).

TABLE 5. Total Uncollected Sales Taxes, Various Years. (\$ Billions.)

	Description/Year	2001	2006	2011
30	Total Potential Untaxed Sales From Internet Commerce	29.9	50.4	70.5
31	Of Which: B-to-B	5.8	7.1	9.9
32	Of Which: B-to-C	24.1	43.3	60.6
33	Average State and Local Sales Tax Rate	0.064		
34	TOTAL POTENTIAL UNCOLLECTED SALES TAX	1.9	3.2	4.5
35	Of Which: B-to-B	0.4	0.5	0.6
36	Of Which: B-to-C	1.5	2.8	3.9

As can be seen from Table 5, calculations based upon Department of Commerce data now indicate that only \$1.9 billion may have been uncollected from remote sales in 2001, and that this amount will only reach \$4.5 billion in 2011. These figures are 14 percent and 8 percent, respectively, of the \$13 billion and \$55 billion claimed by the most recent University of Tennessee study for these two years.³¹

Further, under current law, it is wholly within a state's power to audit its in-state businesses for compliance with use tax laws. Thus, if a state had reason to believe that business compliance rates were inadequate, it would be well within its rights to audit such businesses more thoroughly. Given this, the large role of B-to-B e-commerce included in the Tennessee studies may be largely irrelevant to the question of whether changing the definition of nexus is a fiscal necessity for the states.

Even in the realm of B-to-C e-commerce, not only is a large and growing pool of uncollected use tax not in evidence, there are alternative remedies that states can profitably explore. These typically involve raising the awareness of the use tax obligation among state residents, and reducing the difficulties of compliance for them.

One way to do so is to integrate the use tax with the income tax in those states where income tax is levied. As of 1999, at least 15 states and the District of Columbia did so. One academic study on the question of compliance noted that 18,000 residents of Kentucky, for example, voluntarily reported use tax obligations totaling almost \$12 million in 1999 when a use-tax line was added to the Kentucky income tax form.³² This averaged to over \$650 per respondent.

The Tennessee studies also fail to recognize that there would be shrinking economic activity from home-state retailers due to imposition of use tax from out-of-state jurisdictions. This shuffling/transfer of resources would be accompanied by a fairly

³¹ Bruce and Fox (2001) p. 6

³² Martie (1999), p. 35.

substantial dead-weight efficiency loss due to the increased administrative burden states would have to incur to enforce compliance nationwide. This study does not calculate this loss, but any full reckoning of the costs and benefits of a changed definition of nexus would properly include this assessment.

As Tennessee study co-author William Fox notes in a different article, the use tax “requires retailers to account for sales made in all market states, distinguish between taxable and exempt transactions and apply the proper tax rate to the transaction....tax administrators may need an auditing presence in virtually all states to ensure the integrity of use tax laws.”³³ The Tennessee studies certainly have not undertaken to show that any increased tax neutrality between use-taxed and sales-taxed transactions compensates for this dead-weight loss.

It is also possible that changing the definition of nexus could be a Pandora’s box, with unforeseen consequences for domestic and international economic policy. If Paris, Texas, is allowed to tax remote sellers, could Paris, France, be far behind? America’s economic trading partners may cite any change to the American definition of nexus as a precedent during future rounds of multi-lateral trading negotiations. As University of Chicago economist Austan Goolsby has observed, “European officials will face a powerful temptation when it comes to taxing Internet commerce. The majority of online merchants are located in the United States. There will be increasing pressure to put special taxes on e-commerce that will disproportionately affect U.S. merchants competing with domestic [i.e., non-U.S.] retailers.”³⁴

Ultimately, however, the remaining definitional and measurement difficulties involved in estimating the amount of losses suffered by states from e-commerce, argue against precipitous action. Further research into the different effects of the Internet on consumer and business tax behavior should be undertaken to more precisely ascertain the likely future impact of the key variables affecting uncollected sales tax.

³³ Fox and Murray (1997).

³⁴ Goolsby (2002), p. 12

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NOTES TO POTENTIAL UNCOLLECTED SALES TAX ARISING FROM INTERNET GROWTH

LINE DATA SOURCE OR FORMULA

BUSINESS-TO-BUSINESS INTERNET COMMERCE

- 1 Historical Data for 1999 and 2000 from March, 2002 Dept. of Commerce Census Bureau E-Stats Report. Subsequent years projected from linear trend.
- 2 Percentage Obtained By Inquiry to Thomas L. Mesenbourg, Director, Bureau of E-Commerce
- 3 Line 1 X line 2
- 4 Historical percentage From March 2002 Department of Commerce Census Bureau E-Stats Report. Internet share estimated by author to increase .33% per year
- 5 Line 4 X line 5
- 6 Historical Data for 1999 and 2000 from March, 2002 Dept. of Commerce Census Bureau E-Stats Report. Subsequent years projected from linear trend.
- 7 Historical percentage From March 2002 Department of Commerce Census Bureau E-Stats Report. Internet share estimated by author to increase .5% per year
- 8 Line 6 X line 7
- 9 Sum of lines 5 and 8
- 10 Line 9 X 97.5%, the percentage used by Bruce and Fox (2000) to adjust for share 45 states with sales taxes as percentage of national economy
- 11 Compound Annual Growth Rate: $(2011-1999)^{(1/12)}-1$. Informational Purposes Only.

BUSINESS-TO-CONSUMER INTERNET COMMERCE

- 12 Historical Data for Q1 2000 through Q4 2002 from March, 2003 Dept. of Commerce Census Bureau B to C E-Stats Report. 1999 and years 2003 - 2011 projected from linear trend.
- 13 Line 12 X 97.5%, the percentage used by Bruce and Fox (2000) to adjust for share 45 states with sales taxes as percentage of national economy
- 14 Compound Annual Growth Rate: $(2011-1999)^{(1/12)}-1$. Informational Purposes Only.

TOTAL INTERNET COMMERCE

- 15 Sum of lines 9 and 12
- 16 Sum of lines 10 and 13
- 17 Compound Annual Growth Rate: $(2011-1999)^{(1/12)}-1$. Informational Purposes Only.

LESS EXEMPT B-TO-B

- 18 Percentages for 1999 and 2000 derived from Bruce and Fox (2000) estimates. Percentages for 2001 - 2011 derived from Bruce and Fox (2001) estimates.
- 19 Line 10 X line 18

LESS B-TO-B SALES TAX COLLECTED

- 20 B-to-B use tax compliance rate estimated by author. See accompanying text for additional citations.
- 21 Formula is (line 10 - line 19) X line 20

LESS EXEMPT B-TO-C

- 22 Derived from Bruce and Fox estimates (2001), based on Forrester projections for B-to-C E-commerce growth
- 23 Bruce and Fox rate re-estimated by author in accordance with revised projections for B-to-C e-commerce growth from Forrester (2002). Formula is line 22 (2001) + .05
- 24 Line 13 X line 23

LESS B-TO-C ON WHICH TAX COLLECTED

- 25 Percentages derived from Bruce and Fox (2001) estimations
- 26 Percentage increase in collection rate due to acquisition of physical nexus arising from normal economic growth. Estimate by author. See accompanying text.
- 27 Sum of lines 25 and 26
- 28 Formula is (line 13 - line 24) X line 27

- 29 Sum of lines 19, 21, 24, 28

TOTAL POTENTIAL UNTAXED INTERNET COMMERCE

- 30 Line 16 minus line 29
- 31 Line 10 minus line 19 minus line 21
- 32 Line 13 minus line 24 minus line 28

- 33 6.4% taken from Bruce and Fox (2001). (Note: national average sales tax rate is probably closer to 5.5% or a value for line 33 of 0.055)

TOTAL POTENTIAL UNCOLLECTED TAX FROM INTERNET COMMERCE

- 34 Line 30 X line 33
- 35 Line 31 X line 33
- 36 Line 32 X line 33

(\$ Billions)	Projected													
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Description/Year														
Business-to-Business Internet Commerce														
1 Total Manufacturing Shipments--All E-Commerce	729.6	776.9	824.2	871.5	918.8	966.1	1013.4	1060.7	1108	1155.3	1202.6	1249.9	1297.2	
2 % Net of Inter-plant	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	
3 Amount Net of Inter-plant	642.0	683.7	725.3	766.9	808.5	850.2	891.8	933.4	975.0	1016.7	1058.3	1099.9	1141.5	
4 % Internet	0.05	0.05	0.05	0.053	0.056	0.059	0.062	0.065	0.068	0.071	0.074	0.077	0.08	
5 Manufacturing Shipments--Internet Only	32.1	34.2	36.3	40.6	45.3	50.2	55.3	60.7	66.3	72.2	78.3	84.7	91.3	
6 Merchant Wholesale Trade--All E-Commerce	182.5	212.8	243.1	273.4	303.7	334.0	364.3	394.6	424.9	455.2	485.5	515.8	546.1	
7 % Internet	0.12	0.12	0.12	0.125	0.13	0.135	0.14	0.145	0.15	0.155	0.16	0.165	0.17	
8 Merchant Wholesale Trade-Internet Only	21.9	25.5	29.2	34.2	39.5	45.1	51.0	57.2	63.7	70.6	77.7	85.1	92.8	
9 Total B-to-B Internet Commerce--All States	54.0	59.7	65.4	74.8	84.8	95.2	106.3	117.9	130.0	142.7	156.0	169.8	184.2	
10 Total B-to-B Internet Commerce--Sales Tax States	52.7	58.2	63.8	73.0	82.6	92.9	103.6	114.9	126.8	139.2	152.1	165.6	179.6	
11 Compound Annual Growth Rate--1999-2011	10.76%													
Business-to-Consumer Internet Commerce														
12 Retail E-Commerce--All States	20.1	28.9	35.9	45.5	53.4	61.8	70.1	78.4	86.7	95.1	103.4	111.7	120.1	
13 Retail E-Commerce--Sales Tax States	19.6	28.2	35.0	44.4	52.1	60.2	68.3	76.5	84.6	92.7	100.8	108.9	117.1	
14 Compound Annual Growth Rate--1999-2011	16.05%													
Total Internet Commerce														
15 Total Internet Commerce--All States	74.1	88.6	101.4	120.4	138.2	157.0	176.4	196.3	216.8	237.8	259.4	281.5	304.2	
16 Total Internet Commerce--Sales Tax States	72.3	86.4	98.8	117.4	134.7	153.1	172.0	191.4	211.4	231.9	252.9	274.5	296.6	
17 Compound Annual Growth Rate--1999-2011	12.49%													
Less Exempt B-to-B														
18 % Exempt--Tennessee Estimate	0.45	0.43	0.40	0.43	0.47	0.51	0.55	0.59	0.61	0.62	0.63	0.63	0.63	
19 Exempt B-to-B Internet Sales--Tennessee Estimate	23.5	25.0	25.2	31.0	38.5	47.7	57.4	67.5	77.4	86.8	95.9	104.9	113.8	
Less B-to-B Sales Tax Collected														
20 B-to-B Compliance Rate	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
21 B-to-B Sales Tax Collected	24.8	28.3	32.8	35.6	37.5	38.4	39.3	40.3	42.0	44.5	47.7	51.6	55.9	

	Less Exempt B-to-C													
22	% Exempt--Estimate From Forrester (2000) Projections			0.09	0.10	0.11	0.12	0.14	0.15	0.16	0.16	0.17	0.17	0.17
23	% Re-estimation From Forrester (2002) Projections			0.14	0.15	0.16	0.17	0.19	0.20	0.21	0.21	0.22	0.22	0.22
24	Exempted B-to-C Sales--Re-estimation			4.9	6.5	8.4	10.4	12.9	15.2	17.6	19.8	21.9	23.9	25.8
	Less B-to-C On Which Tax Collected													
25	Base Collection Rate--Tennessee Studies			0.19	0.20	0.22	0.24	0.24	0.26	0.27	0.27	0.27	0.28	0.28
26	% Increase Arising from Physical Nexus Acquisition			0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06
27	Revised Collection Rate			0.20	0.22	0.24	0.26	0.27	0.29	0.31	0.32	0.32	0.33	0.34
28	B-to-C Sales Tax Collected			6.1	8.3	10.5	13.1	15.2	18.0	20.5	23.1	25.6	28.1	30.6
29	Total Adjustments			69.0	81.5	94.9	109.5	124.8	141.0	157.5	174.2	191.1	208.5	226.1
	Total Potential Untaxed Internet Commerce													
30	TOTAL POTENTIAL UNTAXED INTERNET SALES			29.9	35.9	39.8	43.6	47.2	50.4	53.9	57.6	61.8	66.0	70.5
31	Of Which: B-to-B			5.8	6.3	6.6	6.8	6.9	7.1	7.4	7.9	8.4	9.1	9.9
32	Of Which: B-to-C			24.1	29.6	33.2	36.8	40.2	43.3	46.5	49.8	53.3	56.9	60.6
33	Average State and Local Sales Tax Rate			0.064										
	Total Potential Uncollected Tax From Internet Commerce													
34	TOTAL POTENTIAL UNCOLLECTED SALES TAX			1.9	2.3	2.5	2.8	3.0	3.2	3.4	3.7	4.0	4.2	4.5
35	Of Which: B-to-B			0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6
36	Of Which: B-to-C			1.5	1.9	2.1	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.9