

This paper appears with title "Recent Research on Sales Tax Conundrums," in State Tax Notes, November 11, 2002, volume 26, pages 331-36. The paper is posted here with STN permission.

**A Report on Research into Proposed
Solutions to Sales and Use Tax Conundrums**

Benjamin Russo
Economics Department
Belk College of Business Administration
The University of North Carolina at Charlotte
9201 University City Blvd.
Charlotte, NC 28223-0001
brusso@email.uncc.edu
(704) 687-4137

September 2002

Abstract

This report describes the results of ongoing research on state and local general sales and use taxes. Since services are trending down as a share of consumption, and e-commerce is trending up, sales and use tax bases are declining as a share of the economy. The new research studies the effects of tax reforms proposed to shore-up state tax bases. Thus far, the results suggest: 1) extending sales taxes to untaxed services and/or remote sales could have substantial social benefits, 2) reducing reliance on sales taxes and replacing lost revenue with higher income taxes appears to produce more harm than good, 3) reducing sales taxes on business inputs would tend to improve economic performance, 4) the beneficial economic effects of reforms could be substantial even if reform is only partial, and 5) it appears that remote sales would have to increase significantly before they would interfere with the success of sales and use tax reform proposals.

A Report on Research into Proposed Solutions to Sales and Use Tax Conundrums

Introduction

Since services are trending down as a share of consumption, and e-commerce is trending up, sales and use tax bases are declining as shares of states' gross products. Sales and use tax bases have been eroded also by newly legislated exemptions and credits.¹ Unless state tax systems are modernized to account for these trends, sales and use taxes may not continue as viable sources of revenue. To date, a number of proposals to shore-up sales and use tax bases have been suggested. These include levying sales and use taxes on currently untaxed services², extending sales taxes to currently untaxed out-of-state vendor sales³, and reducing reliance on sales and use taxes.⁴

In principle, the suggested reforms have the capacity to shore-up sales and use tax bases.⁵ Some observers suggest, however, that comprehensive extensions of sales taxes to services, and particularly to internet sales, could damage state economies. Often such views amount to informed conjecture, rather than rigorous analysis and hard evidence. Thus far, economists have not provided much evidence

¹ See Donald Bruce and William F. Fox, 2001, "State and Local Sales Tax Revenue Losses from e-commerce: Updated Estimates," manuscript, <http://cber.bus.utk.edu/ecommm/ecom0901.pdf>.

² William Fox and Matthew Murray, 1988, "Economic Aspects of Taxing Services," National Tax Journal, Vol. 41, pp. 19-36.

³ William Fox and Matthew Murray, 1997, "The Sales Tax and Electronic Commerce: So What's New?" National Tax Journal, Vol. 50, pp. 573-92.

⁴ Charles McLure, 2000, "Rethinking State and Local Reliance on the Retail Sales Tax: Should we Fix the Sales Tax or Discard it?" Law Review, Brigham Young University, pp. 77-138; Hal Varian, January 21, 2001, "Drop the Sales Tax," The Industry Standard (go to Varian's website for a link to this paper); McLure, 2001, National Tax Journal, "The Tax Assignment Problem: Ruminations on How Theory and Practice Depend on History," Vol. LIV, pp. 339-364; and Bruce and Fox, 2001, op cit. It should be noted that McLure 2000 (last paragraph) says that adjustment costs in replacing sales taxes by income taxes are so high, it is best to fix the sales tax.

⁵ State business income tax bases also appear at risk. However, the reasons differ. Business income tax bases are threatened by disagreements over the definition of nexus for business income tax purposes, problems in taxation of intangible capital, ambiguity in the definitions of business and non-business income, tax competition, and success of business income tax avoidance strategies. The research described here does not address these problems. For discussions see Ronald Snell, 1993, Financing State Government in the 1990s, (Wash. DC: National Conference of State Legislatures, and National Governor's Association); David Brunori, 1998, The Future of State Taxation (Wash. DC: Urban Institute Press); and Robert Tannenwald, 2001, "Are State and Local Revenue Systems Becoming Obsolete?" New England Economic Review, 27-43.

indicating how sales and use tax reform proposals might affect state economies. This report describes the results of new and ongoing research on state and local general sales and use taxes. This research studies the economic effects of tax policy reforms proposed to protect state and local sales and use tax bases from continued erosion. The new research also studies the economic effects of taxing business inputs.⁶

If history is a guide, extending sales and use taxes to currently untaxed services and remote vendors could be politically difficult. As well, it could be difficult to administer and comply with taxes on many types of services. Substantial discussion of these difficult issues has occurred, so they are not addressed by the research described here.⁷ The central issue addressed by the new research is the economic impact of proposals designed to attack the root-causes of the secular decline in sales and use tax bases. Root-causes are well known. The erosion of tax bases stems partly from legislated exemptions. In this case, policymakers have the ability, if not the will, directly to address the source of the problem. Legislated base erosion will be fixed when policymakers stop extending new exemptions and credits.

Sales and use tax base erosion also stems from structural changes in the economy. These include the secular shift away from production and consumption of tangible goods, toward services, and the shift in the location of purchases away from traditional brick-and-mortar outlets to remote outlets. Extending sales taxes to include more services and remote purchases could dampen, if not eliminate, the negative tax base effects resulting from structural economic change. However, proposed tax reforms could have serious economic consequences. Whether or not these consequences make people better or worse off will depend on the net effects from altering current policy. The net economic effects are far from obvious.

The most damaging economic consequences of taxes are the distortions and excess burden they cause. Excess burden is defined in the third section below (Nastiest Thing about Taxes). Distortions

⁶ Benjamin Russo, 2002, "State Sales and Use Tax Bases at Risk: A Study of the Economic Effects of Suggested Reforms," unpublished working paper, University of North Carolina at Charlotte. The results of this research are available on request by contacting brusso@email.uncc.edu.

⁷ On problems in implementing Florida's ill-fated comprehensive sales tax on services see Walter Hellerstein, 1988, "Florida's Sales Tax on Services," *National Tax Journal*, Vol. 41, pp. 1-18; and James Francis, 1988, "The Florida Sales Tax on Services: What Really Went Wrong," in *The Unfinished Agenda for State Tax Reform*, edited by Steven Gold (NCSL, Wash. DC), pp. 129-152. For more general discussions see Snell op cit, Brunori op cit, and Tannenwald op cit.

arise under current sales and use taxes because these taxes are levied primarily on tangible goods, while most services are untaxed: everything else held constant, buyers will tend to substitute untaxed services for taxed goods.⁸ However, most services are purchased by businesses.⁹ Taxing business inputs distorts production and business investment decisions and causes taxes to cascade. Therefore, blanket extension of sales taxes to services could replace one distortion - toward services and away from goods - with another distortion - in business inputs decisions. Additionally, since sales at brick-and-mortar outlets generally are taxed, but many remote sales are untaxed, buyers tend to substitute remote purchases for more traditional purchases. However, many critics of comprehensive sales tax collection on remote sales suggest that taxing internet sales could dampen growth in new technology. The new research calculates the net economic effects of these factors.

In particular, the study produces measurements of the *long run* effects of sales tax reform on the capital labor ratio, *GSP*, and the excess burden of the tax system. The results derived thus far suggest: 1) extending sales tax to more services and/or remote sales would tend to produce net social benefits, 2) reducing reliance on sales taxes and replacing lost revenue with higher income taxes probably would do more harm than good, 3) removing sales taxes from business inputs would tend to expand state economies and improve welfare, 4) partial reforms would capture substantial shares of long-run gains from reform, and 5) it appears that remote sales would have to become quite large to significantly alter the effects state tax reform would have on state economies: thus, beneficial effects of tax reforms enacted in the near term are unlikely to be offset by e-commerce growth for some time to come.

Sales and Use Tax Conundrums

State and local sales and use taxes are levied primarily on tangible goods sold by brick-and-mortar establishments. Therefore, the steady secular trends toward services consumption and e-commerce spell trouble for state and local sales and use tax bases.

⁸ For this reason, it may very well be the case that state tax policies have unwittingly contributed to the secular trend toward services.

⁹ Fox and Murray, 1988, *op cit*, and John Due and John Mikesell, 1994, *Sales Taxation: State and Local Structure and Administration*, (Urban Institute Press, Wash DC)..

Although the trend toward services slowed during the previous recession, evidence suggests that it will resume its relentless march forward once the economy recovers. Manufacturing productivity growth exceeds productivity growth in the production of services. Relatively high manufacturing productivity growth reduces the relative prices of manufactured goods, which tends to reduce value added in manufacturing as a share of the economy. Ironically, relatively high manufacturing productivity growth tends to increase services as a share of the economy. Since there is no reason to expect productivity trends to change anytime soon, the trend toward production and consumption of services likely will continue.¹⁰

Internet sales currently are quite small, relative to total sales. However, internet sales are growing at a relatively rapid rate. Since states cannot require out-of-state vendors to collect their sales taxes, and use taxes are difficult to collect, internet sales eventually could contribute to the decline in state and local sales and use tax bases. States have responded to shrinking sales tax bases by raising sales tax rates. But rigorous evidence suggests that raising tax rates is akin to pouring salt on the wounds. For example, Austan Goolsbee has conducted empirical tests indicating relatively large tax elasticities for internet sales.¹¹ This evidence suggests that increases in sales tax rates could contribute to the trend toward online sales. Just as worrisome, Goolsbee also reports measurements indicating that tax sensitivity of internet sales appears to increase considerably with the time elapsed after a household initially goes online.¹² This suggests that any *tax-induced* shift toward internet sales would tend to continue even if states' inclinations to increase sales tax rates abate.

¹⁰ J. Bradford DeLong and Lawrence Summers argue that productivity growth in telecommunications and computers is likely to power higher than average manufacturing productivity growth for at least another decade. See DeLong and Summers, 2001, The 'New Economy': Background, Historical Perspectives, Questions, and Speculations, Economic Review, Federal Reserve Bank of Kansas City, 86, pp. 29-60: www.kc.frb.org; and DeLong, 2002, "Do We Have a New Economy?" in Innovation and the Economy, edited by Adam Jaffe, Josh Lerner, and Scott Stern (MIT Press and NBER, Cambridge Mass.), pp. 163-184.

¹¹ See Goolsbee, 2000, "In a World Without Borders: The Impact of Taxes on Internet Commerce," Quarterly Journal of Economics, Vol. 125, pp. 561-76.

¹² See Goolsbee, 2000, "Tax Sensitivity, Internet Commerce, and the Generation Gap," in Tax Policy and the Economy, edited by James Poterba (NBER: Cambridge, Mass.) pp. 45-66.

The Nastiest Thing About Sales Taxes

Sales taxes face an additional drawback that, ironically, increases rather than decreases the tax base: a surprising proportion of sales taxes are collected from sales of business inputs.¹³ The problem here is that taxing business inputs is an economically inefficient method of broadening a tax base. John Due and John Mikesell say that the biggest economic drawback to sales taxes occurs when the tax falls on business inputs.¹⁴ The tax on business inputs distorts business decisions. As a result, the social cost of the tax exceeds the amount of revenue collected. More than two centuries ago Adam Smith recognized the existence of the “excess” social costs of taxes when he said “Every tax ought to be so contrived as both to take out and to keep out of the pockets of the people as little as possible, over and above what it brings into the public treasury of the state” (Page 351, Part II, Chapter II, Book V).¹⁵ Looked at from an economic efficiency perspective, the excess burden of sales taxes is their most damaging feature. According to Neil Bruce, excess burden is “economic value flushed down the drain.”¹⁶

Two well understood, and relatively easily measured, facets of excess burden are administrative costs and compliance costs. Even well designed tax systems cannot completely escape these costs. However, some of the most significant social costs of economic activities are hidden. This is true of excess burden. Although excess burden can be very large, it is very difficult to observe and measure. The hidden aspect of excess burden is apparent in the following example. Suppose a government imposes an admissions tax on tickets to baseball games. Some fans will attend fewer games. And some fans, that otherwise might root for the home-team from a seat behind first base, might decide, instead, not to go to

¹³ The definitive study on sales tax and business inputs is by Raymond Ring, who estimates that, on average, 41% of state sales tax revenue is collected from sales of business inputs. See Ring, 1999, “Consumers’ Share and Producers’ Share of the General Sales Tax,” National Tax Journal, Vol. 52, pp. 79-90.

¹⁴ Due and Mikesell, 1994, op cit.

¹⁵ Adam Smith, An Inquiry into the Nature and Causes of the Wealth of Nations, originally published in 1776, subsequently published in 1976 (University of Chicago Press, Chicago Ill.).

¹⁶ Bruce, 2001, Public Finance and the American Economy (Addison-Wesley Longman, Boston MA).

the ballpark at all. These stay-at-home fans will pay nothing into the government's baseball ticket tax fund but are, nonetheless, worse off. The tax leads these fans to substitute an activity with less value from their point-of-view, namely watching baseball from a seat inside the living room, for an activity with higher value, namely watching baseball from a seat inside the ballpark. This loss in economic value is not captured in any economic statistic.

Excess burden often is much more subtle than in this simple example. But the fact that excess burden is difficult to observe and measure makes it no less pernicious, just as the fact that it is difficult to detect carbon-monoxide in the air makes it no less damaging to one's health.

Although it is difficult to measure the hidden excess burden of taxes, it is not impossible. Once excess burden is measured, it is possible to reduce it by substituting less burdensome taxes for taxes having larger excess burden. The most promising environment in which to correct the avoidable excess burden of taxes is precisely when economic conditions are such that policymakers *must* modernize the system. This is the environment we presently find ourselves in.

Suggested Policy Reforms: Costs versus Benefits

The new research constructs a computer simulation model and uses the model to study the economic effects of policies designed to reduce shrinkage in state and local sales and use tax bases. The simulations also study the economic consequences of taxing business inputs. Extending sales taxes to services and to out-of-state sales would tend to forestall further declines in the tax base by permitting the base to adjust automatically to long-run shifts in the composition of spending and in the locations of purchases.

Reducing reliance on sales and use taxes, say by increasing reliance on income taxes, would substitute a tax base that is vulnerable to secular shifts in the composition or location of purchases, to a tax base free of this vulnerability.

Each approach has advantages and disadvantages. The advantages result from broadening the tax base; lowering tax rates, if reforms are revenue-neutral; and reducing existing distortions due to disparate tax treatment of goods versus services, and brick-and-mortar versus remote sales.

A potential disadvantage of taxing services could occur because firms purchase a relatively large proportion of services. To the extent that a tax on services falls on service inputs to production, production decisions would be distorted, and excess burden would tend to increase. The tax on business inputs tends to fall on business investment, distorting these choices. A potential disadvantage of taxing e-commerce could occur because e-commerce consists predominately in business-to-business transactions.¹⁷ A potential disadvantage of replacing sales taxes with income taxes is lower saving and investment. Recent empirical work by Robert Carroll et al. indicates that the personal income tax discourages small business investment in machinery and equipment.¹⁸ Although state marginal income tax rates appear low relative to federal rates, the two marginal rates together determine the excess burden of income taxes. This is important because the excess burden of a tax increases more than in proportion to the marginal tax rate. This is the square-rule of public finance theory: the excess burden of a tax tends to increase with the square of the tax rate. Since an increase in a state marginal income tax rate also increases the total, state plus federal, marginal income tax rate, excess burden could increase out of all proportion to the apparently low state marginal tax rate.

Simulation Results

Computer simulation models have long been used to study the economic effects of taxes. Examples of this research are published in John Shoven and John Whalley (1972), Charles Ballard, Don Fullerton, Shoven, and Whalley (1984), Alan Auerbach and Laurence Kotlikoff (1987), and Robert Lucas (1990).¹⁹ Before the 1990s, such studies relied on large and relatively slow main-frame computers.

¹⁷ Austan Goolsbee and Jonathan Zittrain, 1999, [Evaluating the costs and benefits of taxing internet commerce](#), Berkman Center for Internet and Society, Harvard Law School; and Bruce and Fox, 2001, op cit.

¹⁸ Robert Carroll, Douglas Holtz-Eakin, Mark Rider, and Harvey S. Rosen, 2000, "Personal Income Taxes and the Growth of Small Firms," NBER Working Paper 7980, www.nber.org.

¹⁹ Shoven and Whalley, 1972, "A General Equilibrium Calculation of the Effects of Differential Taxation of Income from Capital in the U.S.," *Journal of Public Economics*, Vol. 1; Ballard, Fullerton, Shoven, and Whalley, 1984, *A General Equilibrium Model for Tax Policy Evaluation*, NBER (Univ. of Chicago, Chicago); Auerbach and Kotlikoff, 1987, *Dynamic Fiscal Policy* (Cambridge Press, Cambridge England); and Lucas, 1990, "Supply-side Economics: An Analytical Review," *Oxford Economic Papers*, Vol. 42, pp. 293-316.

Computer simulation of tax reform has come into its own with the spread of high-speed desk-top computers.

The computer model used for the study of proposed sales tax reforms consists in a set of equations that capture the way economic choices respond to taxes. For example, the model contains an equation that captures household preferences for goods relative to services, and the effects on choices of differential tax treatment. Everything else held constant, the higher the tax on tangible goods relative to services, the higher the proportion of household spending on services. Since substantial amounts of business inputs are taxed by the sales tax, the model includes an equation that captures the effects of sales taxes on business purchases. The model includes perfectly competitive capital and labor markets, and an imperfectly competitive market for business inputs.²⁰

In order to use the computer model to measure the quantitative impact of taxes on economic choices, a set of initial benchmark values must be established for capital per worker, *GSP*, and the excess burden of the tax system. With one exception, these initial benchmark values are found with the tax system in the model set up to mimic state tax systems: First, sales of most tangible goods are taxed while sales of most services are untaxed. Second, remote sales are a relatively small proportion of total sales. Third, personal income taxes account for about 65% of state tax revenue, sales and use taxes account for about 30%, and corporate income taxes account for about 5% (this is the exception).²¹ And fourth, about 41% of sales taxes are collected from sales of business inputs.²² After establishing the benchmark values, a particular tax feature in the system is changed, and values are re-calculated. Then the percentage difference between the initial benchmark value and the new, post tax reform, value is calculated.

²⁰ The complete model consists of a system of eight simultaneous equations. This model is available on request at brusso@email.uncc.edu. Similar models are described in detail in Russo, 2002, "Taxes, the Speed of Convergence, and Implications for Welfare Effects of Fiscal Policy," *Southern Economic Journal*, Vol. 69, pp. 444-456.

²¹ These values represent the state tax system in North Carolina. As a proportion of tax revenue, sales tax revenue in North Carolina is lower than average. Therefore, the estimates produced by the simulations tend to underestimate the effects of reform. This makes the results conservative. That is, the effects of reform in the average state are likely to be larger than those reported in the study.

²² 41% is the state average proportion of sales tax revenue resulting from sales of business inputs, as estimated by Ring, 1999, op cit.

Percentage changes in variables are calculated because it is difficult to interpret changes in absolute values of the variables.

The central problem at issue here is the structure of taxation and secular trends in production and consumption, not the size of the government, so only equal revenue reforms are studied. Thus, if a tax reform tends to increase the tax base in the model, the model's tax rates are lowered to maintain revenue at the pre-reform level. Again, since the central issue here is tax structure, the difficult and important equity effects of reform are not addressed in this study. The computer simulations measure the effects of tax reform on the sales tax rate, the capital labor ratio, *GSP* and the excess burden of the tax system.

Reform 1, extend sales tax to services: The first reform studied extends the sales tax to all services, *ceteris paribus*. Since the level of revenue is fixed, the sales tax rate declines. Reform 1 has no effect on the capital labor ratio or *GSP*. Excess burden declines. This means that extending the sales tax to services tends to increase economic welfare. There are two reasons for this. First, since the tax base broadens, the tax rate declines. By the square rule, excess burden declines more than in proportion to the decline in the tax rate. Second, taxing services eliminates the current sales tax distortion against tangible goods.

Reform 2, rescind sales tax on business inputs: The second reform studied removes the sales tax from all business inputs. Since the level of revenue is fixed, the sales tax rate increases. Since Reform 2 reduces production distortions, the capital labor ratio and *GSP* increase. Nevertheless, excess burden declines, because the sales tax distortion to production decisions and business investment decline. The decline here is smaller than in Reform 1 because the tax rate increases slightly, which tends to increase the tax distortion between goods and services. Still, Reform 2 tends to expand the economy and improve economic welfare.

Reform 3, extend sales tax to services, rescind sales tax on business inputs: This combines Reforms 1 and 2. In this case, the sales tax rate falls by less than in Reform 1. The capital labor ratio and *GSP* increase as in Reform 2. And excess burden declines by about the sum of the declines in Reforms 1 and 2.

Reform 4, replace sales tax with higher income tax rate: this reform eliminates the sales tax altogether, and makes up for the revenue loss by increasing the personal income tax rate. The income tax rate increases from 3.5% to 5.9%. Recall that the economic effects of this increase include the effect of the federal personal income tax. If the total, state plus federal, average marginal personal income tax rate is, say 30%, this perhaps seemingly innocuous 2.4% increase in a state marginal tax rate effectively increases the income tax rate faced by the household from 30% to 32.4%. The increase in excess burden from this reform is much larger than it would be if there were no federal income tax, and produces the largest change in excess burden found by this study. As well, Reform 4 causes the capital labor ratio and *GSP* to decline by relatively large amounts.

Remote sales currently are only a tiny proportion of total sales.²³ The model used thus far reflects this fact. Since e-commerce has been growing relatively rapidly, the basic model is next adjusted to examine the possible effects of larger remote sales. It is impossible to know how large a share of total sales e-commerce is likely eventually to become. Economic data provide no guidance here, but even with very rapid growth remote sales are unlikely to be 20% of total sales for some time to come. Thus, the next set of four experiments assumes remote sales are 20% of the total.

In the first of these experiments all tangible goods, including remotely sold tangibles, are taxed; no services, including remote services, are taxed; and 41% of business inputs, including remote business inputs, are taxed. Since remote tangibles are taxed, extending the sales tax to remote sales increases the tax base and decreases the sales tax rate. There is no change in the capital labor ratio or *GSP*. Excess burden decreases slightly, as a result of the decline in the tax rate and the resulting decline in the distortion between goods and services. In the second of this set of experiments, the sales tax is extended to all services. The sales tax base broadens more than before so the sales tax rate falls even more. The capital labor ratio and *GSP* are nearly unaffected, and excess burden declines an additional substantial amount. In the third experiment in this set, the tax on business inputs is rescinded. In this case, the tax rate rises, capital and *GSP* grow, and excess burden increases again. The fourth experiment in this set

²³ Goolsbee and Zittrain, 1999, op cit.

combines the second and third: services are taxed and business inputs are relieved of tax. In this case, the capital labor ratio and *GSP* increase, and excess burden decreases a relatively large amount.

The simulations require a substantial set of quantitative assumptions. For example, an assumption must be made about consumers' preferences for goods versus services, in the absence of taxes. It is important to check to see if the simulation results are sensitive to these assumptions. If so, then the results may be artifacts of the experimental design, and may not be reliable guides to economically efficient tax reform. The first sensitivity check recalculates the effects of each tax reform under the assumption that remote sales are 20% of total sales. This has very little effect in the beneficial effects of reform.

The second sensitivity check calculates the effect of partial tax reforms. Extending the sales tax to all services may be politically and administratively difficult, if not impossible. It is hard to know how extensive such a reform is likely to be in any particular state, and it is impossible to generalize to all states. Nevertheless, to obtain some idea of the effect of partial reforms, they were cut in half: Instead of extending the sales tax to all services, it is extended to 50% of services. Instead of rescinding the tax on business inputs, the tax is removed from 50% of inputs. The results suggest there are diminishing marginal returns in tax reform; that is, the additional benefit from reform declines as the size of the reform grows. Therefore, substantial gains appear to be achievable by partial reform, with the size of additional gains falling the more comprehensive are the reforms.

Finally, the effects of reforms are recalculated after varying the values of parameters in the model. The simulation results appear to be relatively insensitive to reasonable changes in parameters values.

Conclusion

Since services are trending down as a share of consumption, and e-commerce is trending up, state sales and use tax bases are declining as a share of economic activity. The research described here studies the effects of tax reforms proposed to shore-up sales and use tax bases.

Some observers suggest that comprehensive extension of the sales tax to e-commerce could reduce technological growth, and be harmful. Also, since a substantial proportion of services are purchased by businesses, extending sales tax to services could fall on business inputs, and, thereby, distort business decisions. However, most current sales taxes fall primarily on tangible goods, so currently structured sales taxes already distort economic choices, biasing purchases toward services. Additionally, many remote purchases currently escape sales and use tax, so currently structured sales taxes distort the location of purchases, biasing sales toward remote vendors. The economic consequences of tax reform will be the net result of adding to some distortions and decreasing others.

A priori, it is impossible to know what the net effects might be. This report describes the results of new and ongoing research that attempts to measure the net long-run economic consequences of suggested reforms in sales and use taxes. The research does not directly address the important political, administrative, short-run stability, and equity issues raised by tax reform.

The results of this research suggest: 1) extending sales taxes to untaxed services and/or remote sales would have substantial social benefits, 2) reducing reliance on sales taxes and replacing lost revenue with higher income taxes appears to produce more harm than good, 3) reducing sales taxes on business inputs would tend to improve economic performance, 4) the economic benefits of reforms could be substantial even if reform is only partial. This is important because comprehensive reforms may be difficult to achieve. Of course, the less extensive reforms are, the less successful they will be at shoring-up the tax base. 5) It appears that remote sales would have to increase significantly before they would interfere with the effects of sales and use tax reform proposals. This suggests that the beneficial effects of sensible reforms enacted in the near term are unlikely to be offset by e-commerce growth for some time to come.

Finally, the structure of the tax system used in the research described above is similar to tax structure in the state of North Carolina. North Carolina relies more heavily on the personal income tax than does the average state. This makes the results conservative: if the tax reforms are instituted in a

more typical state, their beneficial effects are likely to be larger than the effects thus far by the research described here.

Bibliography

- Auerbach, Alan, and Laurence Kotlikoff, 1987, Dynamic Fiscal Policy (Cambridge Press, Cambridge England).
- Ballard, Charles, Don Fullerton, John Shoven, and John Whalley, 1984, A General Equilibrium Model for Tax Policy Evaluation, NBER (Univ. of Chicago, Chicago).
- Bruce, Donald, and William F. Fox, 2001, "State and Local Sales Tax Revenue Losses from e-commerce: Updated Estimates," manuscript, <http://cber.bus.utk.edu/ecom/ecom0901.pdf>.
- Bruce, Neil, 2001, Public Finance and the American Economy (Addison-Wesley Longman, Boston MA).
- Brunori, David, 1998, The Future of State Taxation (Wash. DC: Urban Institute Press).
- Carroll, Robert, Douglas Holtz-Eakin, Mark Rider, and Harvey S. Rosen, 2000, "Personal Income Taxes and the Growth of Small Firms," NBER Working Paper 7980, www.nber.org.
- DeLong, J. Bradford, and Lawrence Summers, 2001, "The 'New Economy': Background, Historical Perspectives, Questions, and Speculations," Economic Review, Federal Reserve Bank of Kansas City, Vol. 86, pp. 29-60: www.kc.frb.org.
- DeLong, J. Bradford, 2002, "Do We Have a New Economy?" in Innovation and the Economy, edited by Adam Jaffe, Josh Lerner, and Scott Stern (MIT Press and NBER, Cambridge Mass.), pp. 163-184.
- Due, John, and John Mikesell, 1994, Sales Taxation: State and Local Structure and Administration, (Urban Institute Press, Wash DC).
- Fox, William, and Matthew Murray, 1988, "Economic Aspects of Taxing Services," National Tax Journal, Vol. 41, pp. 19-36.
- _____, 1997, "The Sales Tax and Electronic Commerce: So What's New?" National Tax Journal, Vol. 50, pp. 573-92.
- Francis, James, 1988, "The Florida Sales Tax on Services: What Really Went Wrong," in The Unfinished Agenda for State Tax Reform, edited by Steven Gold (NCSL, Wash. DC), pp. 129-152.
- Goolsbee, Austan, 2000, "In a World Without Borders: The Impact of Taxes on Internet Commerce," Quarterly Journal of Economics, Vol. 125, pp. 561-76.
- _____, 2000, "Tax Sensitivity, Internet Commerce, and the Generation Gap," in Tax Policy and the Economy, edited by James Poterba (NBER: Cambridge, Mass.) pp. 45-66.
- Goolsbee, Austan, and Jonathan Zittrain, 1999, [Evaluating the costs and benefits of taxing internet commerce](#), manuscript, Berkman Center for Internet and Society, Harvard Law School.
- Hellerstein, Walter, 1988, "Florida's Sales Tax on Services," National Tax Journal, Vol. 41, pp. 1-18.

Lucas, Robert, 1990, "Supply-side Economics: An Analytical Review," Oxford Economic Papers, Vol. 42, pp. 293-316.

McLure, Charles, 2000, "Rethinking State and Local Reliance on the Retail Sales Tax: Should we Fix the Sales Tax or Discard it?" Law Review, Brigham Young University, pp. 77-138.

_____, 2001, National Tax Journal, "The Tax Assignment Problem: Ruminations on How Theory and Practice Depend on History," Vol. LIV, pp. 339-364

Ring, Raymond, 1999, "Consumers' Share and Producers' Share of the General Sales Tax," National Tax Journal, Vol. 52, pp. 79-90.

Russo, Benjamin, 2002, "Taxes, the Speed of Convergence, and Implications for Welfare Effects of Fiscal Policy," Southern Economic Journal, Vol. 69, pp. 444-456.

_____, 2002, "State Sales and Use Tax Bases at Risk: A Study of the Economic Effects of Suggested Reforms," unpublished working paper, University of North Carolina at Charlotte.

Shoven, John, and John Whalley, 1972, "A General Equilibrium Calculation of the Effects of Differential Taxation of Income from Capital in the U.S.," Journal of Public Economics, Vol. 1.

Smith, Adam, An Inquiry into the Nature and Causes of the Wealth of Nations, originally published in 1776, subsequently published in 1976 (University of Chicago Press, Chicago Ill.).

Snell, Ronald, 1993, Financing State Government in the 1990s, (Wash. DC: National Conference of State Legislatures, and National Governor's Association).

Tannenwald, Robert, 2001, "Are State and Local Revenue Systems Becoming Obsolete?" New England Economic Review, 27-43.

Varian, Hal, January 21, 2001, "Drop the Sales Tax," The Industry Standard (go to Varian's website for a link to this paper).