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February 10, 2010

Ex Parte

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: A National Broadband Plan for Our Future, GN Docket No. 09-51

Dear Ms. Dortch:

Verizon is requesting that the attached letter to Blair Levin, Executive Director, Omnibus Broadband Initiative, be placed on the record in above docket. Please let me know if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Ann D. Berkowitz". The signature is written in a cursive, flowing style.

Attachment

cc: Blair Levin

Kathleen Grillo
Senior Vice President
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February 8, 2010

Blair Levin
Executive Director, Omnibus Broadband Initiative
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

Re: A National Broadband Plan for Our Future, GN Docket No. 09-51

Dear Mr. Levin:

In connection with the Commission's work in developing the National Broadband Plan for Congress, Verizon submits the attached whitepaper recommending reforms to federal and state tax policy. As we discuss in detail, revising the current tax law at both the federal and state levels will spur investment in broadband infrastructure and help make consumer use of broadband more affordable.

Sincerely,

A handwritten signature in black ink that reads "Kathleen Grillo".

Reforming Federal and State Tax Policies Will Increase Investment in Broadband and Consumer Adoption

Federal and state tax policies are crucial to promoting increased broadband deployment and consumer use of broadband. Tax laws should incent providers to invest in their networks and encourage consumers to incorporate broadband into their daily lives through participation in online activities and transactions. Unfortunately, however, some tax laws discourage increased network investment as well as consumer adoption of broadband. These laws should be revised to drive more capital investment in broadband infrastructure and spur consumer use of broadband.

The current patchwork of tax laws applicable to broadband network investment and the services sold over such networks is very complicated, largely due to the fact that most of the taxes were developed for a monopoly industry structure that existed in the 20th century, prior to the advent of today's competitive and innovative 21st century digital marketplace. Existing federal and state tax policies have a substantial impact on broadband investment and consumer adoption and access across the country. The ability of companies to maintain or increase their capital investment in broadband networks is inextricably tied to the tax burdens imposed on such private investment, affecting both cash flow available for additional investment as well as the actual cost of the investment and the industry's corresponding "return on investment" as compared to other industry sectors. Taxation of broadband services also directly affects consumer adoption by requiring consumers to use amounts budgeted for phone and broadband costs to pay taxes and fees imposed on such services, reducing the amount such consumers have available to spend on purchasing new, innovative digital and broadband services.

Given the significant impact of federal and state tax policies on broadband investment and consumer adoption and access, we urge federal policymakers to take the following actions to reform current law: **First**, we recommend that Congress establish a national framework for the fair taxation of digital goods and services that would prevent multiple and discriminatory taxation of such services. **Second**, we recommend that Congress update the federal depreciation rules to reflect convergence in the industry as well as the rapid pace at which technological innovation is occurring with the goal of accelerating the flow of capital into new broadband investment. **Third**, federal policymakers should support state efforts to study the impact of the current excessive levels of tax on both broadband investment and consumer services to ensure that these policies do not affect consumer access and adoption and encourage continued broadband network investment.

The Commission should recommend that Congress establish a national framework for the fair taxation of digital goods and services to prevent multiple and discriminatory taxation of such services.

State laws governing sales and use tax are ill-equipped for today's digital age, and their application to online goods and services threatens to create a new impediment to broadband investment and adoption. Historically, states have not taxed "intangible" products and services – often referred to as "digital goods" – such as downloadable e-books, movies, music, software and other services and information delivered electronically. However, in their search for new tax revenue to address ongoing state budget deficits, an increasing number of states have targeted this new and innovative digital marketplace. And they are experimenting with a variety of approaches

to raise tax revenue from these new services. For example, because California does not tax “services,” state legislators have introduced bills that would tax these intangible products and services as “tangible” products (property that can be touched). In 2007, the first state enacted legislation to tax digital goods. In 2008, 11 additional states considered legislation to impose tax on digital goods, with five of those states adopting new taxes. In 2009, 13 states considered legislation to impose taxes on digital goods and six of those states adopted new taxes on digital goods, bringing the total number of states that have imposed digital goods taxes to 12 states. Despite this trend, seven states defeated proposals to impose new taxes on digital goods in 2009.¹

States have rushed to impose new taxes on downloads without first ensuring that these new taxes can be administered fairly and equitably. Without guidelines, the pyramiding of tax on digital transactions is inevitable, with taxes first imposed on the business-to-business purchases and taxes imposed again when the digital good or service is sold to the ultimate consumer. Because digital goods and services can be downloaded in a mobile environment, there is substantial risk that multiple states and localities will claim they have authority to tax the same digital transaction. In addition, many services that are already subject to tax, such as video services and video games, could be subject to double taxation. Examples of discriminatory taxes being imposed on digital transactions are increasing. Lincoln, Nebraska recently asserted that digital downloads are subject to their local occupation tax – because the tax only applies to providers of communication services, the tax would apply differently to companies that compete with each other in the digital marketplace.² Likewise, the state of Kentucky asserted that ringtones are taxable under its communications and utility gross receipts taxes – because such tax only applies to communications providers, a ringtone downloaded to an iPhone would presumably be taxable, while a ringtone downloaded to an iTouch would not.³

Certain states have enacted extremely broad definitions of what will be taxable as a digital transaction creating enormous uncertainty as to what should or should not be taxed. The state of Washington recently passed legislation including any “digital automated service” in the sales tax base.⁴ The term was defined very broadly to include “any service transferred electronically that uses one or more software applications.”⁵ Arguably, this would have included on-line advertising services in the tax base when traditional advertising services had not been previously subject to tax. While the state is currently working to remedy some of the issues that have surfaced since the measure was passed, the definition itself still remains broad and will continue to cause confusion over what digital services are taxable in the state.

Adverse impacts of these new tax laws may include a drop in digital goods sales, disparate state tax treatments for digital goods companies, taxation of in-state digital goods businesses when out-of-state competitors are not taxed, and costly state tax compliance efforts for digital goods retailers selling goods in jurisdictions with varying tax policies around the country. The

¹ Attached charts reflect state enactment of legislation to tax digital goods and services.

² LMC 3-24-080 - <http://lancaster.ne.gov/city/attorn/lmc/ti03/ch324.pdf>

³ KRS 136.602(2)(a)(7) and KRS 136.602(2)(a)(7) define a ringtone as a communications service. However, the Kentucky State Sales and Use Tax excludes ringtones from its definition of communications services and defines it as a digital good. KRS 139.195(28)(c)(9)

⁴ RCW 82.04.192(3).

⁵ Id.

development of digital products that are inherently environmentally friendly will be discouraged if these digital transactions are taxed without guidelines to address these issues – all of these concerns will ultimately impact consumers. For consumers, these new taxes on digital goods and services will significantly increase the cost of access to the newest, most innovative broadband technologies. Taxes on digital goods reduce the value of broadband networks, the revenue and cash generated by them, and suppress incentives to invest and opportunities for network providers to create jobs.

In order to avoid multiple and discriminatory taxation of digital transactions enabled by new broadband technologies, the federal government should establish a national framework that ensures fair and consistent taxation of these previously untaxed goods and services sold over global networks. The goal is not to avoid taxation or to require the imposition of a uniform rate of tax, but to ensure that there is uniformity in the rules that apply to the taxation of these new digital goods and services and to ensure they are taxed in a simple, fair and equitable fashion. The framework would ensure that multiple states do not try to tax the same digital transaction, that tax pyramiding does not occur, that taxes that are vestiges of the utility tax system will not stifle innovation and the growth of these new digital services, that companies competing in the digital marketplace are not subject to different tax regimes, that state legislatures are the ones to decide what new digital goods and services will be taxed, and that consumers understand what is taxable.

Congress took its first step to preserve affordable consumer access to the Internet in 1998.⁶ In order to encourage growth of the Internet and to prevent Internet access from being subject to the excessive level of tax imposed on communications services – average tax rates on communications service are two to three times the level imposed on other goods and services⁷ – Congress enacted the Internet Tax Moratorium.⁸ Unfortunately, however, very few states have reformed their antiquated tax statutes.⁹ Failure to act here is inconsistent with recommendations by state organizations, such as the National Governor’s Associations and the National Conference of State Legislatures, which have highlighted the critical need for states to reform their telecommunications tax systems to address both the excessive level of tax as well as the tax inequities attributable to pre-convergence differences in how competing services are taxed.¹⁰ As a result, Congress has extended the Internet tax moratorium, currently scheduled to expire in 2014, three times, ensuring affordable access to the Internet continues for all Americans.¹¹

⁶ Internet Tax Freedom Act. Public Law 105–277, 47 USC 151 (OCT. 21, 1998)

⁷ David Turek, Paul Bachman, Steven Titch and John Rutledge; *Taxes and Fees on Communication Services*; The Heartland Institute (May 2007)

⁸ See n.6.

⁹ K. Barrett and R. Greene; *Growth and Taxes: Why outdated state tax systems undercut economic vitality, and what states can do about it*; *Governing* (January 2008)

¹⁰ <http://www.nga.org/portal/site/nga/menuitem.8358ec82f5b198d18a278110501010a0/?vgnnextoid=7de82ad998254010VgnVCM1000001a01010aRCRD>; Twenty-First Century Communications, Policy Statement of the NCSL’s Communications, Financial Services & Interstate Commerce Committee, <http://www.ncsl.org/Default.aspx?TabID=773&tabs=855,21,633#21Century> passed by the full membership on July 25, 2008.

¹¹ 2007 Passage of HR 3678 (Public Law No: 110-108); Senate vote was by unanimous consent on 10/25/07; House vote agreeing to the Senate amendment was 402-0 (Rollcall vote #1014 on 10/30/07). 2004 Passage of S. 150 (Public Law No: 108-435); Senate vote was 93-3 on 4/29/04; House agreed to by voice vote on 11/19/2004.

Excessive and discriminatory taxes and fees on communications services have a disproportionate impact on consumers who are struggling economically – studies have found that groups which have generally lagged in Internet adoption, such as senior citizens, blacks and Latinos, are more likely to use cell phones for voice service as well as access to the Internet and other broadband services. The study indicates that these groups would find it hardest to be without their cell phones, also used for access to digital data, so discriminatory taxes on wireless services are likely to have a disproportionate impact on poorer consumers.¹² The Cell Tax Fairness Act, which has broad bipartisan support in the House and Senate, is another example of federal legislation that would protect consumers, who increasingly use their wireless devices for broadband access, from the imposition of new, discriminatory taxes on their wireless service.¹³

The Commission should encourage Congress to modernize federal law to accelerate the flow of capital into the newest broadband network investments.

The federal tax structure was last updated more than twenty years ago and the taxes that currently apply to broadband networks at the federal and state levels were developed when the U.S. economy was largely a manufacturing economy. Because most of the capital investment in broadband networks comes from private investment, updating outdated federal tax statutes to reflect recent industry convergence and technological innovation would incent capital investment. Given the importance of this sector to job and economic growth – a recent study found that 80% of the total U.S. productivity growth in 2003 and 2004 was attributable to the communications and information technology sector – Congress should ensure that federal tax laws encourage new investment by this industry sector.¹⁴

For example, simplifying and clarifying fiber depreciation rules and providing tax incentives to build new, faster, higher-capacity wireless networks would encourage more broadband investment. Modern high-capacity fiber-optic networks perform multiple functions – video, data, and telephony – that have historically been treated differently for income tax depreciation purposes. There is no rational reason to preserve pre-convergence tax distinctions and apply them to post-convergence networks. To promote further deployment, all multiple-function, high-capacity networks should be subject to uniform treatment – specifically, the 7-year life that current law provides for fiber that is used for one-way video service should apply uniformly to all such networks.¹⁵ Much of the next generation of wireless broadband equipment (LTE) equipment will be in the form of software which generally is depreciated over the life of the

¹² John Horrigan; *Pew Internet & American Life Project*; Pew Research Center (March 2008); National Hispanic Caucus of State Legislators, “No New State and Local Wireless Taxes Resolution,” Sponsored by Rep. Mara Candelaria Reardon (IN), Ratified at 2009 NHCSL Annual Meeting, Santa Monica, CA (November 21, 2009); National Black Caucus of State Legislators, “Promoting Fairness in the Taxation of Wireless Service,” Telecommunication, Science & Technology Resolution TST-10-28, Sponsored by Rep. Joe Gibbons (FL), Ratified in Plenary Session (December 4, 2009).

¹³ HR 5793, Cell Tax Fairness Act of 2008 (April 15, 2008).

¹⁴ Roger Entner & David Lewin, *The Impact of the US Wireless Telecom Industry on the US Economy, A Report for CTIA-The Wireless Association™*; Ovum (September 2005)

¹⁵ IRC Section 168; Rev. Proc. 87-56.

asset or, if separately installed, over three years. Incenting the deployment of this property over the same life as software would encourage faster deployment of the newest wireless networks.

Federal policymakers should support state efforts to study the impact of current state and local taxation of broadband investment and communications services.

Similarly, most state tax statutes have not been updated in decades and do not reflect the industry convergence and technological innovations that have transformed the industry. States should analyze how certain state tax incentives, such as sales tax exemptions, property tax exemptions and income tax credits, would improve cash flow available for broadband investment as well as how broadband investments facilitate the creation of new direct and indirect (other sector) jobs. With most states facing budget deficits, solutions will need to be implemented through broad-based, comprehensive tax reform efforts that ensure that taxes imposed on broadband investments (sales and property taxes) provide such companies with a return on investment that is comparable to other industry sectors.

Affordability and access to broadband services is also affected by the taxes that have historically applied to the services sold by various companies in the industry sector. Taxes imposed on certain digital services (voice, video, data, etc.) are generally tied to the historic regulatory classification of the particular industry providing such services. Studies have found that the average combined federal, state and local wireline service tax/fee rate exceeds 20%, while the wireless service rate averages 15.2% (as compared to a 7.1% average rate for general sales taxes).¹⁶ Generally, these high rates can only be reduced through comprehensive state tax reform efforts. In the last decade, only Virginia has been able to successfully reform its tax system by replacing the existing myriad of local utility taxes on telephone and cable services, which were as high as 30% in some jurisdictions, with a 5% state-wide tax on a broad base of communication services.¹⁷ The new, reduced rate applicable to communications services is consistent with the general sales tax rate applied to other goods and services, ensuring adoption and access remain affordable.

Without greater certainty regarding tax policies applicable to broadband investment, broadband network providers will have less ability and incentive to underwrite needed, substantial, but nonetheless risky, investments in broadening and making existing networks more functional. Using past practices as a guide, these are investment dollars that would have created not only more network options, but also more jobs both directly within broadband companies, but also indirectly as a result of stimulus to workers as consumers and for workers in other sectors that rely on broadband Internet capacity.¹⁸ To the extent that the tax is borne by consumers, the result is to raise the price of broadband access and reduce the number of subscribing households and/or the

¹⁶ Telecommunications Tax Task Force of the Council on State Taxation; *2004 State Study and Report on Telecommunications Taxation*; Council on State Taxation (March 2005); Scott Mackey; *Excessive Taxes and Fees on Wireless Service: Recent Trends*; State Tax Notes (February 18, 2008).

¹⁷ Va. Acts ch. 780 (enacting Virginia Communications Sales and Use Tax Act, codified at Va. Code §§ 58.1-645 through 58.1-662).

¹⁸ Larry Darby and Joseph Fuhr Jr.; *Investing in Economic Growth: Broadband Network Tax Forbearance*; New York Law School, Media Law & Policy, Volume 18, Number 1 (2009)

service features (bandwidth in particular) they can buy.¹⁹ That has the practical effect of reducing revenue from business investment, raising the average cost per household, further diminishing the enthusiasm for more rapid and greater capital expenditure, and possibly precluding or deferring consumer adoption and access to broadband services.

¹⁹ Austan Goolsbee, The Value of Broadband and the Deadweight loss of Taxing New Technology, University of Chicago, GSB, American Bar Foundation, and NBER (January 2006)

ATTACHMENT 1

GROWTH & TAXES

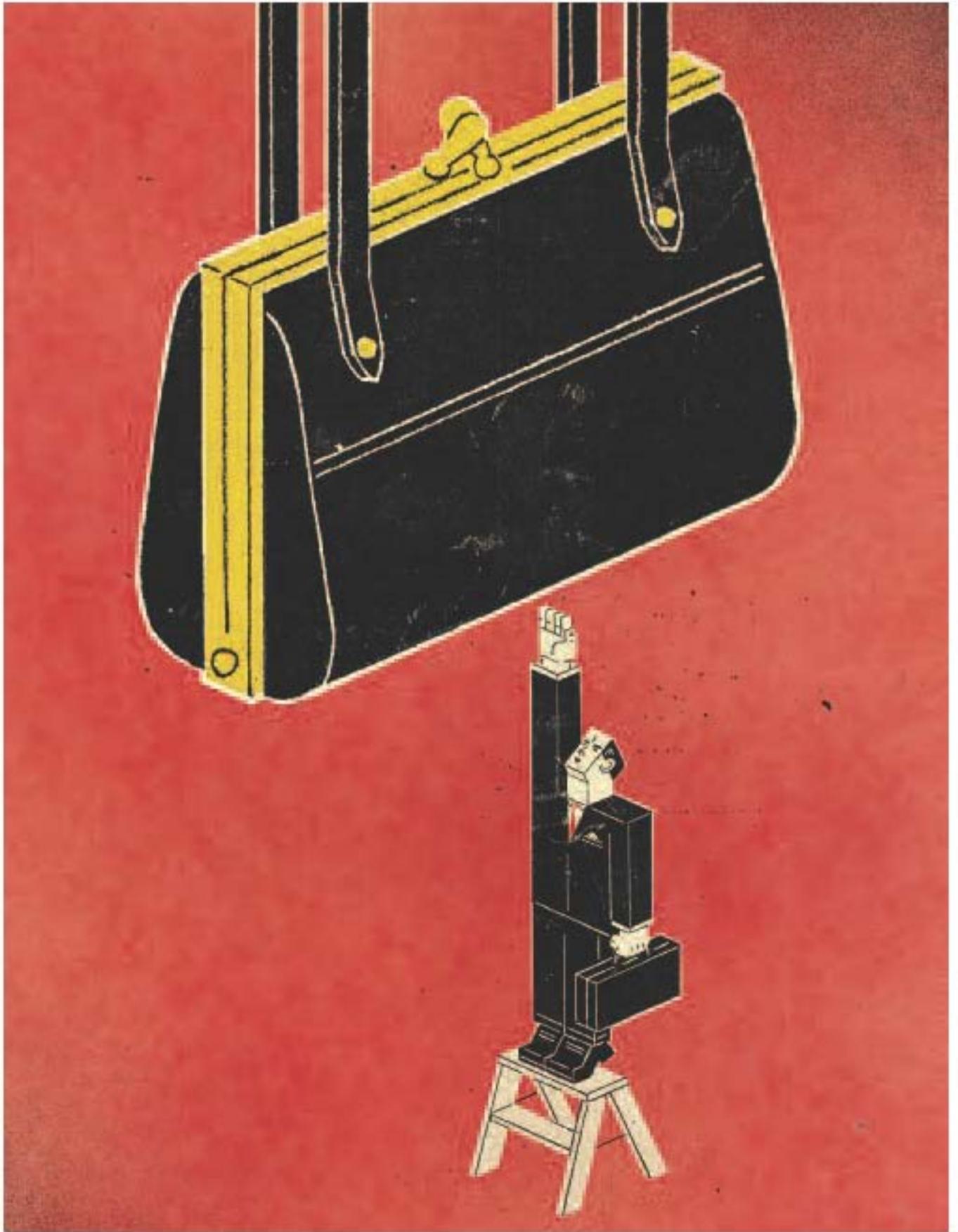
Why outdated state tax systems undercut economic vitality, and what states can do about it.

BY KATHERINE BARRETT
AND RICHARD GREENE

It has been known for a long time that obsolete state tax systems are not producing the revenue states need. But what's becoming clear today is that those tax systems are not only failing to keep up with the dramatic shifts in the U.S. economy. They are a drag on economic growth.

The new economy is more than a swing from manufacturing to services. Thanks to new technology and telecommunications, products can be purchased as easily from an outlet 3,000 miles away as from one down the block. Small businesses are increasingly vital—they now account for about a third of the value of U.S. exports. Moreover, the service economy is moving toward a further evolution: It's becoming increasingly knowledge-based. Where managerial and professional jobs accounted for roughly one-fifth of total employment in 1979, such jobs are now moving past the one-third mark.

And yet, state tax structures, developed at a time when computers—



DAVID PLUNKERT

STATES OF CHANGE

States rated on presence of mechanisms for ongoing review of their tax systems in light of changes in the economy



Source: Pew Center on the States, based on data from the National Conference of State Legislatures, the Center on Budget and Policy Priorities, and state documents

“thinking machines”—were the stuff of science fiction, and the American economy flourished with the automobile industry, have failed to evolve. They are “completely inefficient,” says Ray Schepach, executive director of the National Governors Association. They stifle economic vitality by creating an environment that’s inhospitable to businesses.

To take one example, there is the outmoded way in which telecommunications companies are taxed. A reliable, high-quality and affordable telecommunications system is essential to the economic competitiveness of states—to say nothing of the nation. And yet, these systems are subject to very high taxation rates in a number of states—by a tax approach set when the industry, dominated by one telephone company, was highly regulated. The result is a damper on the telecom industry. According to a 2004 report by the Council on State Taxation, the average effective rate of state and local transaction taxes for telecommunications services is around 14 percent, compared with about 6 percent for general businesses nationwide.

That’s not the only fallout from antiquated state tax systems. They are often unfair—undertaxing one portion of the economy at the expense of others. In many states,

for example, a number of services—including things such as tattoo parlors, car washes and gardeners—are free from any sales tax, while tangible goods—things such as pencils, cars and garden hoes—are subject to a higher tax rate to make up for the slack.

Over the past year, the Pew Center on the States has researched the question of how state tax systems can adjust to a new economy in which fundamental business rules have been changing. The report that follows looks not so much at the basic principles of taxation but at specific tax systems and practices that are critical to promote economic vitality.

Those tax systems are no longer a parochial matter of interest to each of the 50 states as an independent entity. That is, the battle for economic growth is not a civil war among the states anymore. It’s a world war. The U.S. is already at a huge disadvantage in competing internationally based on cost. Wages in India and China, for instance, are as much as 90 percent lower than those in the U.S. The competitive strengths in the U.S. are in innovation, productivity, marketing and entrepreneurship. All of these things can be either helped or hurt by the nature of the states’ tax systems—as can the revenue base, which states need to make the investments necessary to succeed.

“States are aware that their tax structures aren’t up to snuff,” says Michigan Governor Jennifer Granholm. “The question for us as the state of Michigan, is, ‘What is it that is going to make us competitive?’ If it’s not going to be price, then

AT YOUR SERVICE

States that tax professional services and states that tax more than 55 of the roughly 143 different services susceptible to taxation



Source: Pew Center on the States, based on data from the Federation of Tax Administrators

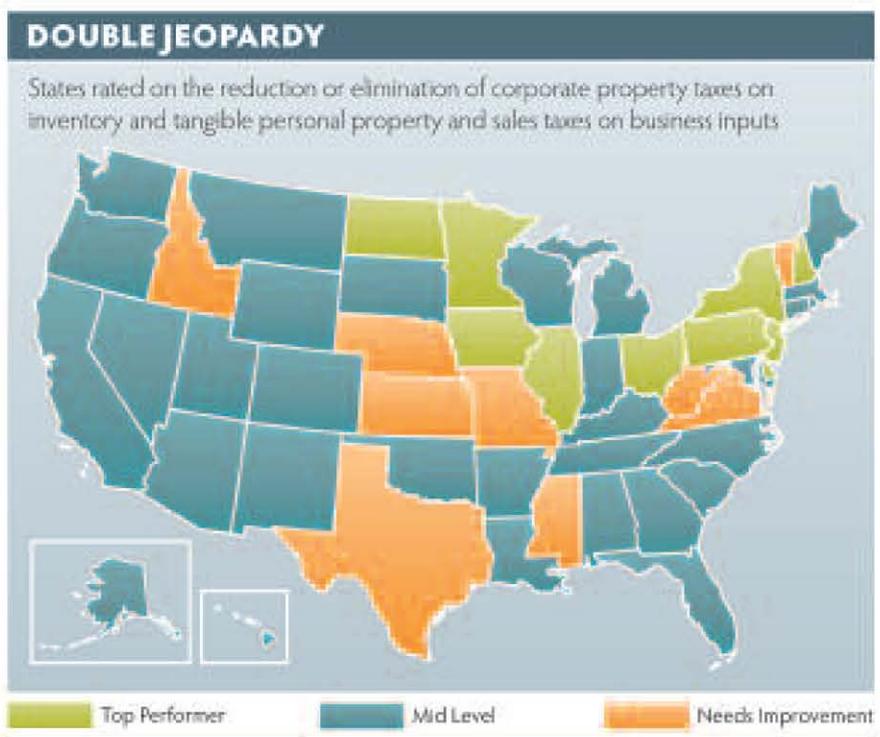
perhaps it's going to be quality, and that means investing in your talent. If you have class sizes of 37, then you're going to be uncompetitive."

Since 2000, virtually every state has commissioned at least one major tax reform panel to study the issue and develop proposals for modernization. Seventeen states now have in place at least an informal mechanism for continuous review of their structures. Much of this action has been propelled by fiscal shortfalls or the realization that various revenue streams are declining relative to spending pressures. In more than a handful of states, the property tax—which has tended to rise inexorably to make up for some of these gaps—has led to citizen rebellions. Both Florida and New Jersey, for example, have been responding to public fury about the property tax by considering major tax restructurings.

The tax questions the states will need to grapple with in coming decades are ones that lie at the heart of the new economy. How can states reshape and modify their tax systems to encourage greater interstate, federal-state and state-local cooperation—and still retain the autonomy of each level of government? In an age of globalization, how do states compete with other countries, yet minimize tax competition among the various levels of government? How do states generate revenues from the intangible products of knowledge-based firms? How do they capture business activity within state borders when borders are increasingly irrelevant in conducting business?

There's a shortage of proven solutions for dealing with a borderless, knowledge-based economy. But some good ideas have emerged—and are already being tested by some states—to deal with the most basic, underlying issue: creating a tax structure that encourages economic vitality.

The material in the pages that follow has been informed not just by predictions of the world to come but by respect for the deep-seated fundamentals of a solid tax system—one that is simple and transparent, with broad-based taxes that provide a balanced revenue stream, spread the tax burden fairly and heighten the chance of compliance.



Source: Pew Center on the States, based on data from Ernst & Young's Robert Clite, Council on State Taxation, Minnesota Taxpayers Association, Federal Reserve Bank of Boston, and state documents

Our research acknowledges the idea that some powerfully held beliefs about appropriate tax policy have little chance of prevailing. For example, some tax policy experts believe there should not be any corporate income taxes, because they raise a relatively small amount of money, are complex and end up being passed along to consumers anyway. Politically, however, it is unlikely that taxpayers will stand for an abolition of the corporate income tax. "Most economists come down saying corporate income taxes are really bad ideas for states," says William Fox, director of the Center for Business & Economic Research at the University of Tennessee. "But then they have to talk about the real world." Similarly, many people believe that tax incentives to corporations are a zero-sum game and potentially unproductive as an economic development tool. But incentives are not going away.

One cluster of questions addresses tactics that pertain to specifics of the new economy: the transition to services; the rapid growth of untaxed Internet sales; the need

to encourage newer high-tech industries while not overburdening old-time manufacturing; an adjustment of telecommunication tax rates and complexity to a world in which telecom companies are no longer monopolies; and strategies to tax multi-state and multi-national corporations in a fair way. Those tactics have grown increasingly critical in order to preserve any kind of equity between large multi-state or multi-national firms and smaller, in-state businesses.

Four areas pertinent to vitality in the new economy are examined in the stories that follow. Fifty-state evaluations inform these articles on the transparency of tax incentives, the efficiency of tax collection, the stability of revenue streams and the tax flexibility states allow their localities—which provide many of the key services that support the new economy.

The Rate Debate

Much of the argument over reform has tended to focus on the notion that a tax increase to any segment of the economy will

A nonprofit organization, the Pew Charitable Trusts applies an analytical approach to improve public policy and stimulate civic life. The Pew Center on the States (PCS) identifies and advances effective policy approaches to critical issues facing states. This series of articles on state tax systems is based on research by PCS. More data and analysis will be available at www.pewcenteronthestates.org.

drive away business, while a tax cut will do the opposite. This was the point Wisconsin state Senator Alan Lasee made during the 2006 campaign season. "High taxes," he told voters, "are driving our employees and businesses to move to other states for higher paying jobs and lower taxes."

Tax rates doubtless play some role in cre-

Dakota and Wyoming. As Tom Clark, executive vice president of the Metro Denver Economic Development Corp. and the Denver Metro Chamber of Commerce, puts it, "If low tax rates were the only factor, Wyoming would be the economic epicenter of the world."

It is theoretically possible to use low

Then there are investments in R&D at a time when innovation is key to economic development and in infrastructure, including broadband access, bridges, airports and, of course, roads.

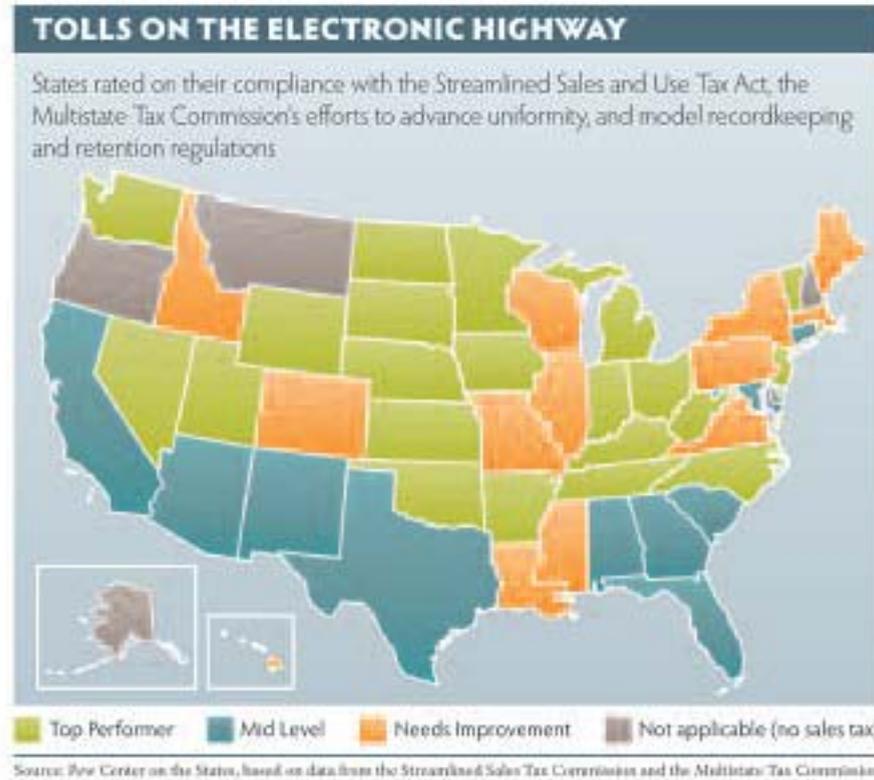
Taxing Services

One of the tectonic shifts that marks the new economy is the long-term transition to a service economy. In 2005, service industries accounted for some 68 percent of the total U.S. gross domestic product and 79 percent of growth in the GDP. Yet, only a handful of states tax more than 80 of the 143 or so common services, according to Federation of Tax Administrators' data. "We've ignored services in the past," says Tennessee's Fox. "But with all the new forms of technology available to expand the service sector, that's no longer a reasonable idea."

A number of obstacles stand in the way. The power of interested or affected parties is high on the list. They can and do lobby their legislators effectively. Last summer, a potentially forward-looking reform in Maine failed to pass the Senate largely because a slew of services—everything from haircuts to car towing—would become subject to tax. "Expanding the tax base to consumer services is good tax policy," says George Washington University professor David Brunori, "but the service providers rarely see it that way."

When it comes to the taxation of professional services—such as those provided by lawyers, accountants, financial advisers—things get even tougher. About 20 years ago, Florida attempted a bold experiment aimed at vastly broadening its taxation of services—to professionals and just about every service in the state's economy. When the state's newspapers and magazines realized that meant that advertising would be taxed, they mounted a full frontal assault. The state backed off, the governor suffered politically and ever since there have been very few states with the fortitude to move in the same direction at full force. Only last month, the Michigan legislature repealed a new service tax—mostly on business-to-business transactions but also on such things as manicures and ski lift tickets—just hours after it went into effect.

Even states that consider adding service taxes in a more marginal way have to deal with the knotty problem of taxing business



ating a fertile economic climate—and if all other things were equal, businesses might choose to settle in lower-tax realms. But in the real world, all things are never equal. Some states have better-educated workforces, a better-developed network of roads or nicer public amenities. These elements, all of which require steady flows of tax revenues, are crucial to the equation.

There is now evidence that low tax rates by themselves are not a silver bullet. In his New Economy Index, Rob Atkinson, president of the Information Technology and Innovation Foundation, measures the progress of states in adapting to the new economy by looking at factors such as workforce creation, entrepreneurial activity and patent creation. Five of the eleven lowest-scoring states on his list are among those having the lowest tax burden: Alabama, Montana, Oklahoma, South

tax rates to drive economic vitality. Robert G. Lynch, chair of the Department of Economics at Washington College in Maryland, points out that academic studies on tax rates "suggest that state and local tax cuts and incentives may help economic growth, provided that government services are not reduced to pay for the tax cuts."

But as Lynch makes clear, in reality, lower taxes tend to lead to service reductions, some of which inevitably fall in areas that fuel economic vitality. Bruce Johnson, a former lieutenant governor of Ohio and head of economic development for that state, notes that "ground zero for economic development is a high-value workforce." That requires a considerable investment in education as well as in quality of life to enable states to compete effectively in the worldwide market for talent.

inputs. The issue is sometimes called pyramiding—at an extreme, a state could tax the services an accountant provides to a law firm, and then tax the services the law firm provides to a car manufacturer, which either builds those taxes into the price of a car or reduces its investments in the state. Most tax experts agree that that placing sales taxes on assets or services purchased by businesses is a form of double taxation and to be avoided.

States are making progress in reducing or eliminating the taxing of business inputs in an arena other than straightforward sales taxes. States that tax inventory and tangible personal property are dwindling in number. Ohio eliminated its taxation of tangible personal property, Indiana is on its way to doing so, and Michigan has enacted a 35-to-40 percent reduction in its tangible property tax.

Meanwhile, the rise of the high-tech and services-based economy has ushered in another trend: The reliance of corporations on customers who are remarkably mobile and geographically widespread. The steadily growing number of sales transactions over the Internet—Jupiter Research Online Retail Forecasts anticipates growth of 10 to 15 percent per year over the next decade—puts local retailers at a disadvantage. Those that sell their wares electronically often escape the sales tax. That, in turn, is contrary to the precept that taxes should be levied over as broad a base as possible so that states and localities can generate the revenue they need at the lowest possible rates.

The biggest obstacle to taxing Internet transactions has been the wide variety of sales tax structures used by the individual states (and their localities), which make it extremely difficult to coordinate a means of taxing them. The Streamlined Sales Tax Project is the clearest effort by states to deal with the complications of this world in which there are virtually no physical barriers to commerce. The ultimate goal of the project is to create an environment in which transactions conducted over the Internet could be easily taxed by states. The agreement would simplify state and local tax returns and the administration of exemptions; it would also provide for streamlined tax returns and a centralized electronic registration system for all member states. Nearly half of the states have made a commitment to either fully or par-

tially comply with the Streamlined Sales and Use Tax Act, which requires uniformity in state and local tax-based definitions and sourcing rules for all taxable transactions.

Catching Corporate Dollars

Even as the technological complexity of the world has advanced, so too has the capacity of large companies to create business forms designed, in part, to shift tax burdens from high-tax states to low- or no-tax states. Many states allege that interstate income shifting amounts to little more than tax evasion, while corporations argue they are legally taking advantage of competing state tax systems. The state courts are divided on the issue, and the U.S. Supreme Court has yet to rule on it.

closes a loophole that many enjoy. In addition, there are potentially significant compliance costs for companies required to alter their bookkeeping. Despite these drawbacks, there is no evidence that the economies of combined-reporting states have suffered compared with those without combined reporting.

Among the states that don't use combined reporting is Iowa. "Our state," says Peter Fischer, professor of urban and regional planning at the University of Iowa, "loses a pretty big chunk of corporate taxes because of its unwillingness to take on combined reporting." Fischer thinks it may be that people who are simply anti-tax see it as a tax increase. Whatever the reason, it has been proposed in Iowa a num-



Source: Pew Center on the States, based on data from the Centre on Budget and Policy Priorities, Institute on Taxation and Economic Policy, and state tax databases and documents

As a remedy, states have been adopting combined reporting as a more comprehensive approach to curbing artificial interstate income shifting. Combined reporting forces corporate parents and their subsidiaries to add profits together. This enables the state to tax the percentage of an out-of-state subsidiary's profits that can legitimately be attributed to the corporation's in-state operations. Many big corporations, obviously, are not advocates of combined reporting. For one thing, it

number of times, but the legislature has not moved on it.

An aligned area in which states are gaining some control is in taxing a growing array of new business structures. James Edward Maule, a professor at Villanova University's School of Law, was one of the first to study the tax treatment of limited-liability companies, limited-liability partnerships and S corporations. The new entities are similar to corporations but have a more flexible ownership

structure. His initial findings on the tax picture made Maule reflect that they were in a state of "chaos."

Take S corporations. The simple problem is that they pass all their profits through to shareholders and are essentially immune from corporate taxes. These profits are taxed by a state personal income tax imposed on the individual shareholders. There are now some 3.6 million S corporations in the United States. Obviously, this means that whenever a company elects to use this form, the state may lose some revenues—and the problem is even more intense for the nine states that don't tax income.

Like S corporations, limited-liability corporations and limited-liability partnerships are also "pass-through entities"—states generally don't impose tax at the corporate level but instead collect taxes by imposing the personal income tax (if they have one) on individual members and partners.

The chaos to which Maule refers came from states having no model for how to tax these various new business forms that aren't exactly corporations but aren't individuals, either. Without guidance, confusion reigned in the states over how to apply their tax structures to these alien new business forms. Until the states got a handle on the very concept of what these new business forms were, they couldn't properly capture taxes duly owed, if they captured any taxes at all. Fortunately, the states have gained a large measure of control in recent years. There is now a Model S Corporation Income Tax Act that provides states with a template for how to tax S corporations and is endorsed by both the American Bar Association and the Multi-state Tax Commission. It gives state lawmakers and tax administrators a way to think consistently about state tax treatment of pass-through entities.

As for LLCs and LLPs, one breakthrough came when states, en masse, determined that they would no longer allow the owners of these new business forms to elect to be classified as one type of entity for federal tax purposes but another for state taxation, which might have given them more favorable treatment. A number of states also now require LLCs and LLPs to withhold taxes on the distributive state share of nonresident members' and partners' earned income. This helps en-

sure that the taxes properly owed to the state don't slip away as they did in the past.

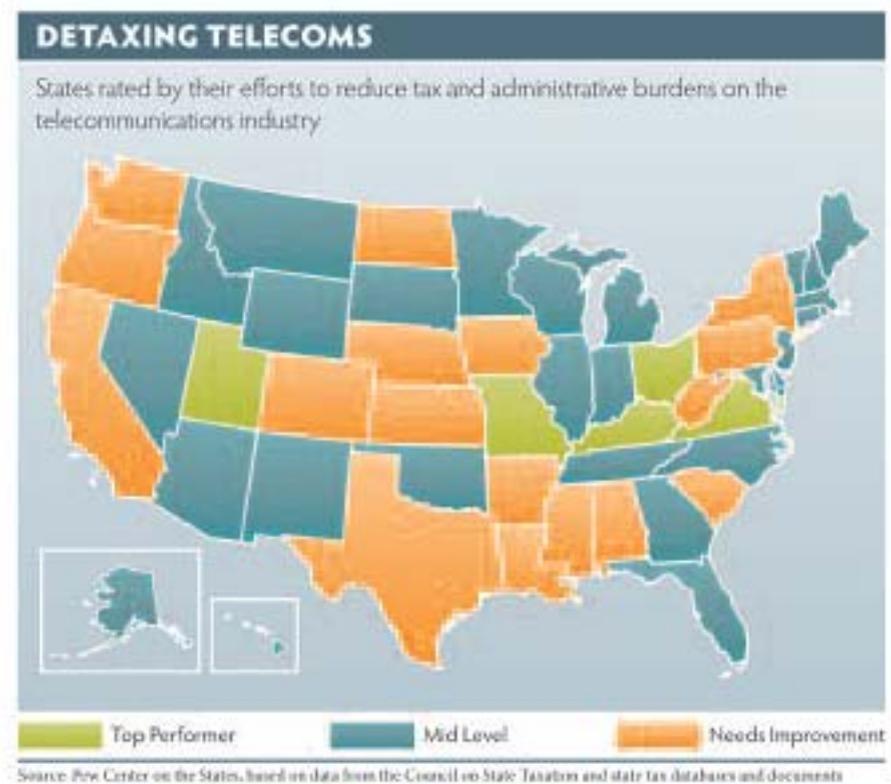
Marconi's Legacy

Telecommunications was once an industry dominated by telephone companies that were monopolies—and states taxed them accordingly. This was a quid pro quo for the lack of competition.

But today's industry is totally different. Not only don't telecom companies have monopolies, there is bitter competition over a business that has changed dramatically from just supplying phone lines to one that permits transfer of data through a variety of technologies—technologies undreamt of when

local taxes—including local telecommunications taxes—to the state governments. The agreement also contains uniform telecommunications sourcing rules and definitions. And if the states succeeded in resolving nexus questions for Internet-based sellers, the change would, for the first time, put telecommunications companies on a level playing field with Internet-based companies that sell essentially the same products and services to customers.

These taxing issues are germane not only to the economic vitality of a state but to its compact with taxpayers—be they individuals or businesses. The way in which revenues are raised—the fairness and transparency—



the codes were written. But states continue to apply the old, outdated tax regimes. Only a handful of states have undertaken telecommunications tax reform over the past decade, and in many of those states, the primary reform has been in centralizing return filing.

Telecommunications companies are also hampered by major administrative burdens. Many states still require telecom companies to file more than 500 returns. This area would be another beneficiary of the streamlined sales tax movement, which requires centralized filing and payment of

is fundamental to the trust constituents have in their government. Right now, most of the states need to modernize their tax policies to encourage growth, and to do that they need to look beyond immediate and purely political considerations. "The biggest problem we have is policy makers making decisions in a vacuum," says Utah state Senator Howard Stephenson. "Overcoming that is crucial to making good tax policy."

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BREATHING States that give localities greater leeway to raise revenue help create robust partners for investing in the future. ROOM

On January 29, Florida's voters will decide whether to approve a constitutional amendment—sent to them by the state legislature—that would set sharp limits on what the state's localities can collect in property taxes. While end-of-year polling data suggest that the amendment is not likely to pass, the specter of losing \$2 billion for schools and yet more dollars for infrastructure, technology updates, public amenities and all the things that attract business, has been a constant worry for cities, counties and school districts.

Tax decisions are always a tradeoff. While the state's beleaguered homeowners would rejoice over any constraints on the much-loathed property tax, there's a downside to removing taxing power from localities: They come up short of money to invest in things that make an economy tick.

"Local governments are a key local economic actor—not just an extension of state government," says Michael Pagano, a dean at the University of Illinois at Chicago. "They need to be nimble in the face of economic circumstances—just like a company does."

Without flexibility, a locality is at the mercy of economic ups and downs and decisions made elsewhere. The locality can't even work with its local business commu-

nity and taxpayers to craft a system that might best meet all their needs.

Flexibility also is key to global competitiveness, working to attract companies from all over the world and to keep a highly mobile labor force in place. "Any restriction on their ability to raise the money to invest," says Barry Bluestone, director of the Center for Urban and Regional Policy at North-

NOTHING IS SIMPLE

Within the 50 state-local fiscal systems lie different sets of rules for cities, counties, towns, townships, villages—at which point the variation spreads from 50 states to 19,000 municipalities, 16,000 towns and villages and 3,000 counties.

eastern University, "can harm them"—and, by extension, the home state as well.

Yet a number of states hold local revenue streams hostage, even though most state and local tax experts agree that giving localities greater flexibility or breathing room—with appropriate controls by the state, of course—is solid fiscal policy. They also agree that it can lead, as Bluestone

suggests, to more vibrant support for economic development.

Control Room

When a locality has authority over its taxes, it can match its revenue-raising tools to the underlying economy. "If a state imposes a uniform revenue and tax structure on its localities," says Chris Hoene, head of research for the National League of Cities, "it ignores the variation of its localities' economic bases and their diverse spending needs." It is, course, up to each locality to figure out whether a particular revenue-raising tool is worth levying on its constituents—whether the administrative or transaction costs outweigh the amount of revenue the tax would raise.

At the same time, localities with a great deal of flexibility need to be cognizant of how their taxes and rates fit in with those the state is already levying—and make sure that the sum total doesn't create an unsupported tax burden. Or that different local variations on a single tax don't impose unfair strains on businesses in a state.

That said, flexibility is still key and one way states give cities or counties leeway is through a local option to control the tax rate and to use the revenues they raise as they see fit—that is, without state earmarks. Localities also can breathe better if they have a

range of taxes to use. For a locality to weather economic ups and downs, it can't be overly reliant on any one source of revenue.

Most states limit localities to the property and sales tax as a sources of revenue. A few keep their localities really short of breath, limiting them to one tax source. Cities, towns and counties in many New England states, for instance, have access only to a local property tax. "On its own, reliance on the property tax produces powerful inequities in development," Bluestone says. "Rich communities get rich because they can provide better schools and police protection than communities with stagnant and falling property values."

The intersection between local authority and revenue independence is what's known as "own-source capacity." That is, the extent to which fiscal policy decisions made by local government officials actually determine the fiscal direction of the locality. In addition to the tax revenue, there are fees and charges that localities set and that flow into the general revenue coffers. These add to the own-source capacity and enhance a locality's ability to pay for services it wants to provide. This is particularly important in localities that have the primary responsibility for their school funding.

There's another part of the equation, of

course. Some states that allow for minimal own-source capacity help to make up for the shortfalls with state aid. While too much state aid can make localities too dependent on the state—and create state budget problems—generally speaking, state aid increases the overall capacity of a local government. In many instances, it provides a level of equalization and base support for localities that may lack other resources. State aid to school districts, for example, often relies on an equalization formula to ensure that the state meets its constitutional responsibility of providing adequate support to schoolchildren.

In Massachusetts, which keeps its localities dependent on one tax, state aid has been used to keep the local communities from diverging dramatically, making up in large measure for whatever inequities are produced by reliance on the property tax.

TEL Talk

Another way that local tax systems are constrained significantly is through tax and expenditure limitations—TELEs. There are two main types of TELEs: those that put restrictions on revenue raising and those that set limits for overall spending. Spending limits on localities are a good deal less common than tax limits.

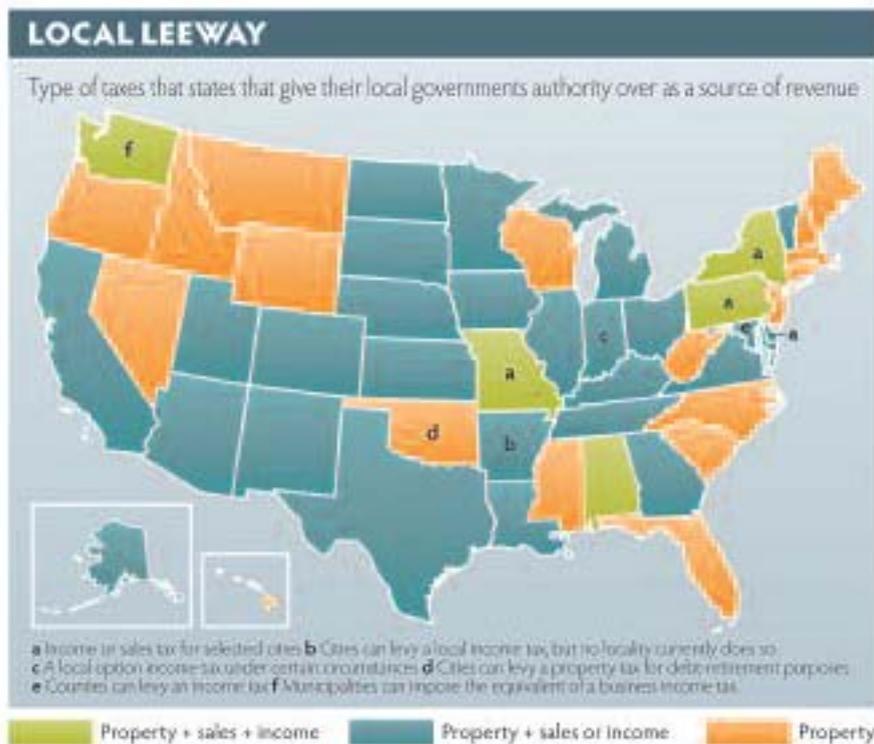
Sometimes, TELEs are imposed by voters. But state legislatures also do it or, as in Florida, ask voters to approve it. It can, however, be short-sighted. "There's an assumption at the state level," says Kevin O'Brien, former director of the Center for Public Management at Cleveland State University, "that every day is a sunny day and there are no extraordinary circumstances—that you won't need firefighters on the ridge."

For localities, the most common TELEs have to do with property taxes. California's Proposition 13 and Massachusetts' Proposition 2.5 are the uber-TELEs. They were imposed by voters, and they have made their mark. "Prop 13 turned California from a state that was among the best in primary and secondary education to a ranking in spending that was near the bottom," says O'Brien, who is currently executive director of the Great Lakes Environmental Finance Center. "That is the legacy of their TELE."

The Massachusetts TELE limits towns and cities from increasing the total property tax levy to no more than 2.5 percent of the community's total assessed value (the levy limit) and from increasing the tax levy to no more than 2.5 percent of the prior year's levy limit. "Homeowners felt they were paying enormously high property taxes," says Bluestone. "And that was because the property tax was essentially the only real source of local revenue."

The bottom line, though, is that the TELE makes it much more difficult for cities and towns to raise the revenue they need. "That you can't raise revenue by more than 2.5 percent on existing property is a powerful constraint," Bluestone says. Towns and cities in Massachusetts often ask voters for an override but these are increasingly unsuccessful, leading to cutbacks in schools and social services—"just when," Bluestone says, "these communities are competing like never before for jobs and investment."

For state policy makers, there are obvious policy levers to pull to improve the fiscal and economic vitality of local governments. More local tax authority is perhaps most obvious. Maintaining or increasing state aid levels, particularly where state aid reduces inequities, is another—but one that is often pulled in the opposite direction, particularly in response to economic downturns. Doing so, however, can harm the ability of the state and its localities to recover from the downturn.



BAITING

Tax incentives will always be with us, but states are finally keeping tabs on what they're getting for their money.

HOOKS

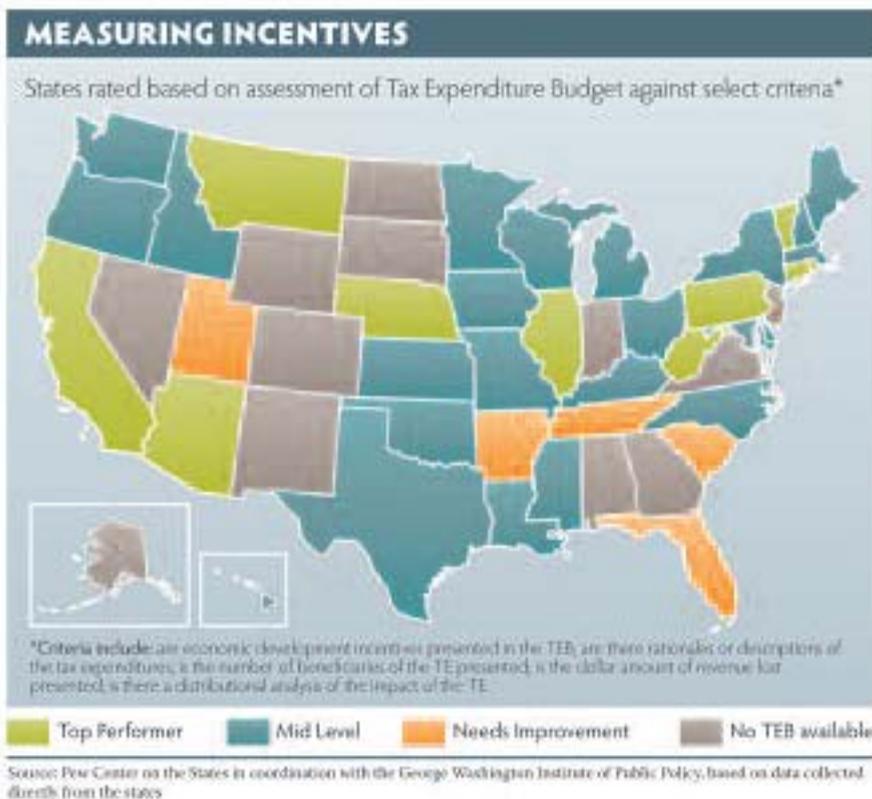
Tax incentives have long been endorsed as the highway to prosperity—attracting businesses, providing jobs and enriching the state. That's been conventional wisdom in most states and cities.

One problem: Most public finance experts consider them bad policy. Tax incentives that target specific companies create inequities, complications and inefficiencies—and they shrink the tax base. Meanwhile, there's little evidence that targeted incentives bring growth in good-paying jobs. In short, big-ticket targeted tax incentives fail the test of any investment: the presence of a clearly identifiable return.

For some companies, they aren't a major factor. In 2006, when Honda decided to put a \$550 million automobile plant in Indiana instead of Ohio, it seemed at first blush that it was tax incentives that won the day for Indiana. In truth, Honda encouraged both states to stay away from pure cash tax incentives. "They needed a 100 percent check-off on what the states could provide in terms of water, sewer, environmental characteristics, roads, bridges and so on," says Bruce Johnson, former lieutenant governor and head of economic development in Ohio.

In the end, the deciding factor revolved around Honda's concern that settling in Ohio would have potentially driven up workforce costs for suppliers located there.

Many companies still seek incentives, and it's difficult for states to back away—particularly when there are lots of jobs involved. But there are questions states can



focus on to mitigate the damage: Are the incentives transparent? Is there a look back to see if promises are met? Are there clawbacks—to retrieve the dollars spent if companies fail to hold up their end of the bargain?

Last November, New Jersey passed major legislation aimed directly at providing this kind of disclosure and transparency. Under terms of the new law, companies that receive a subsidy will have to report such things as their job-creation numbers, benefit rates on subsidized jobs, the number of current workers who get health insurance, and the number of subsidized employees represented by a union. “So many companies are more or less gaming the system,” says state Senator Shirley K. Turner, one of the bill’s sponsors. “This is our way of holding them to their commitments.”

The Pew Center on the States, working in collaboration with the George Washington Institute of Public Policy, looked into the 282 tax incentive programs aimed at encouraging investment and job creation in the 48 states that offer tax incentives for economic development. (Alaska and Wyoming do not.) Some of the findings:

- In a dramatic change from a decade ago, every state that offers tax incentives for economic development undertakes one of three forms of incentive monitoring. Some states pre-certify: Before the recipient of an incentive can claim the tax break, it must prove that a level of investment or job creation has been met. In some states, recipients are allowed to begin taking advantage of the tax benefits before investment and job criteria are met, but they must file periodic reports with the state showing that progress on the criteria is being made. And in other states, the government conducts audits of recipients to determine if they are meeting their obligations.

- Eighty percent of states impose a penalty on recipients that do not meet their obligations. A decade ago, almost no states did so. Penalties include repayment of tax benefits received plus interest. In some states, there are fines and damages as well. Over the past two years, for instance, Pennsylvania took enforcement actions against 10 companies that received incentives from the state—recovering about \$2.3 million.

- Thirty-two states publicly disclose

information about tax incentive recipients—either identifying the recipients, identifying the amounts of tax dollars involved or both.

- Eighty percent of states have tax expenditure budgets, which provide data on the amount of potential tax revenue lost when exemptions or credits are granted. These reports provide information on the total cost, or fiscal impact, of all tax preferences, personal income tax deductions and sales tax exemptions. In practice, however, states vary widely in how much information they provide. California, Connecticut and Pennsylvania provide a great deal of useful

information; Florida, South Carolina and several others do not.

Building on the work of tax expert John Mikesell, the Pew-George Washington team categorized state tax expenditure budgets according to various characteristics, including whether the reports are available online and which taxes are included. They also asked questions such as whether there was a description of the tax expenditure, whether the dollar amount of revenue lost is presented, and whether there is a distributional analysis of the impact of the tax expenditure. These criteria were used to rank the states.

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STAYING

volatile revenue streams and unpredictable taxes bring misery to everyone from state budgeters to businesses.

STABLE

Would you always take a tax cut, of course," says David Johnson, the former chairman of the Ohio Manufacturers' Association. Nothing surprising in those words, but the businessman—he heads a mid-sized tile company in Summitville, Ohio—doesn't stop there. Of even greater importance, he says, "is having a fixed code. If it's going to change every two years—even if it's a change for the better—it's confounding to business plans."

Johnson was deeply involved in a tax reform in Ohio in 2005. A major accomplishment was to replace the state's tangible personal property tax and corporate franchise tax—both of which were perceived as anti-business—with a broad-based, low-rate corporate activity tax, levied on taxable gross receipts from most business activities. Throughout the debate, one focus was on keeping that state's tax system as stable as it has been.

But not all states have been able to keep their focus on stability. The most significant concern for many corporations is the tendency for state legislatures, moved by a variety of causes, to alter their tax policies on a regular basis.

"People who run businesses success-

fully need to know what the variables are," says Bill Blazar, senior vice president for the Minnesota Chamber of Commerce. If a company wants to expand its factory in Minnesota, its planners would factor into that decision how much more the company would have to pay, say, in property taxes and sales taxes on equipment. "They want to write an equation that leads to profitability," Blazar says. "They have to have certainty that the equation will be true."

Meanwhile, a volatile revenue stream is a problem for governments. It makes it hard to maintain programs and invest for future growth. And that is a concern for taxpayers and the business community as well. "Instability in the revenue base obviously leads to difficult budgeting at certain times," says Michael Allen, director of economic research for Maine Revenue Services. "Government programs that businesses may depend on, such as job training or other economic development programs, can be susceptible to cuts."

Volatility is a close cousin of unpredictability. The distinction is that a highly volatile tax structure—one in which revenues bounce around a great deal from year to year—might be predictable if the fac-

tors driving those swings are well understood and are themselves predictable. For example, income taxes are driven in part by stock market capital gains, making them very volatile. They are not very predictable, though, because the market itself isn't and because taxpayers choose when to sell their stocks and realize gains.

One problem with reducing volatility is that the economy gets in the way. A downturn in the business cycle has a negative effect on receipts but rarely reduces the need or demand for government services and programs; an uptick opens the fiscal spigots. Some states are more affected by these cycles than others.

But the economy is just the beginning of the story. As Alison J. Grinnell and Robert B. Ward point out in one of their reports for the Fiscal Studies Program at the Neslson A. Rockefeller Institute of Government, "Even if growth affected all regions and states to exactly the same degree and at exactly the same time, the effect on state revenue would vary because the tax systems used by the states react differently to similar economic situations."

Whatever the cause, the bottom line is the same. "Volatility," says Don Boyd, an independent consultant affiliated with the Rocke-

feller Institute, “has negative effects, whether they’re caused by underlying economic fluctuations or by a volatile tax structure.”

Taming the Wild Ride

States have tools available to tamp down tax revenue volatility and to ease its impact. They can reduce the overall revenue ups and downs by building a diversified portfolio of taxes, relying not just on a single tax or on a single industry but instead using several taxes, such as an income tax, a sales tax and selective excise taxes. Such a diversified base can sometimes draw a large portion of its revenues from sales taxes, which are themselves diversified among various areas of consumption. Individual taxes imposed on different bases almost never move in lockstep, even in recessions and booms, so their instabilities tend to offset each other partially, reducing the volatility of total tax collections.

In the last recession, many states were clobbered by the sudden downward swing in personal income tax receipts. As the stock market and other investments declined, income tax collections collapsed much faster than the economy, creating large holes in the budget of almost every state with an income tax—even in states such as New York and Colorado that have had moderate tax volatility on average over the long term. Colorado’s real per-capita state government tax revenue fell by 12.1 percent in 2002 and by another 7.6 percent in 2003. New York’s fell by 5.7 percent and 4.7 percent in these years—despite a tax increase. “Both states rely on very high-income taxpayers for a disproportionate share of their income tax revenue, with highly variable capital gains income and other forms of non-wage income,” Boyd points out. “With the right kind of economic conditions, these states have extremely volatile revenue.”

The design of individual taxes matters, too. A broad-based tax usually is more stable than one that is narrowly based, and progressive tax rate structures tend to be more volatile than flatter taxes. Choices such as these, made in the interest of tax stability, often conflict with other tax policy goals. One way to stabilize revenue from the income tax, for instance, is to broaden its base and make it less progressive. A flat tax tends to ease volatility. But that stability comes at a cost to low-income taxpayers. With flat-tax proposals, notes Ray Nelson of Brigham

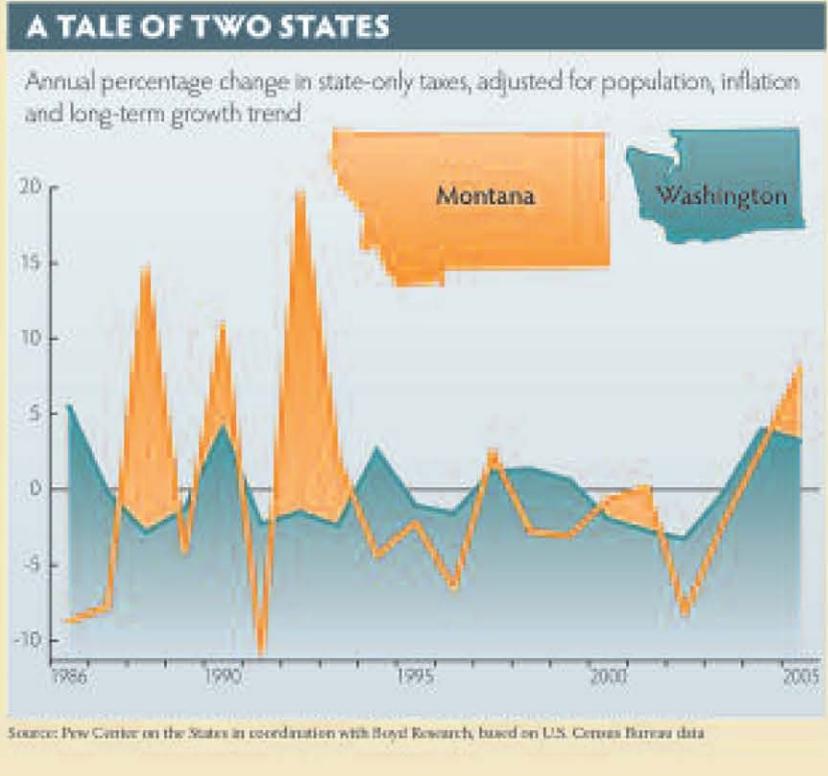
THE BROAD BEAM

The states of Montana and Washington are near the extremes of volatility versus stability. The difference has little to do with the states’ economies and plenty to do with policy decisions. Montana relies on severance taxes and they can swing wildly depending on the price of natural resources. It also leans more heavily on the property tax—which it uses for state funding of schools—than does the typical state. It has no sales tax, and it depends on the income tax about as much as the typical state does.

Washington, by contrast, has no income tax and relies disproportionately on the state sales tax. Although this lack of diversity can be seen as a shortcoming for the state’s structure—and critics complain that sales taxes weigh too heavily on low-income groups—sales taxes tend to be far more stable than income taxes.

Both states are heavily dependent on a single kind of tax. But Montana is narrowly focused on all the natural resources that back up its slogan, “The Treasure State.” Washington’s sales tax, on the other hand, is broad-based.

Many of the steepest variations in Montana’s revenues occurred in the early 1990s and were related in part to changing choices about how to finance schools. So, the state’s revenue streams aren’t as unpredictable as they used to be, although they are still more dicey than Washington’s.

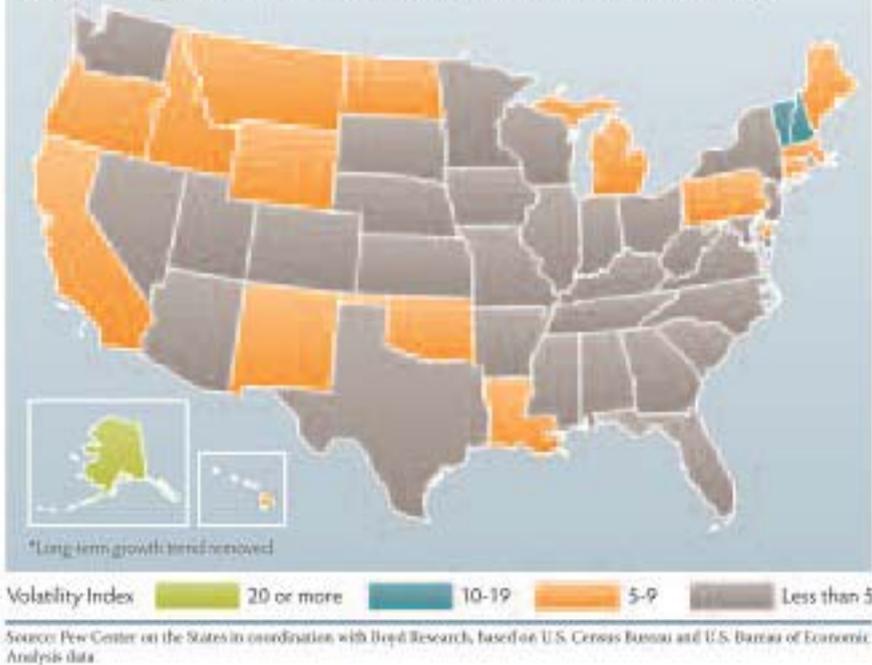


Young University in his paper, “State Income Tax Revenue Volatility Causes and Effects,” revenue volatility is largely dependent on the definition of taxable income while progressive taxes are dependent on many factors that lead to volatility, such as exemptions, deductions and phase-outs, to say nothing of broader tax brackets.

States have other ways to manage revenue volatility that need not conflict with other tax policy goals, but those, too, have shortcomings. Take rainy-day funds, which are supposed to help states weather the swings in the business cycle. States can withdraw money from the funds during a downturn to help stabilize services and

SWINGING REVENUES

Standard deviation of year-to-year percentage changes in real per capita state government tax revenue, 1986 to 2005* (larger values indicate more volatility)



allow orderly policy changes. During recoveries, they can replenish the fund. But several studies have shown that rainy-day funds rarely are large enough to fully stabilize spending during even a modest recession, and establishing funds large enough to achieve this goal would create a new set of political and financial issues.

"Rainy-day funds are great in concept," says Scott Pattison, executive director of the National Association of State Budget Officers, "but rarely are they funded adequately to make a material difference beyond a few projects in any given year." That was certainly the case in Maine during the 2000-01 downturn. The state burned right through its \$140 million fund, says Michael Allen, director of economic research for Maine Revenue Services. As to the current fund, Allen says he doesn't "envision that it would be able to solve the problem entirely. It might lessen it."

There's one other problem with a robust rainy-day fund. "Tax collections high enough to allow states to build rainy-day funds large enough to address the falling revenues experienced in the last recession," says Ron Snell of the National Conference of State Legislatures, "would lead to demands for substantial tax cuts."

Someday, states may be able to use pure financial instruments to hedge revenue volatility related to economic volatility, much as businesses now hedge risk related to exchange rates, interest rates and the prices of specific commodities. The advantage of these instruments, if they become available, is that they would not require states to skew their tax policies to achieve stability goals. This benefit, however, would come at the price of, in essence, purchasing a revenue insurance policy. Then if revenue (or the underlying economy) performed as expected, the money paid for the equivalent of premiums would be gone forever.

Rating the States

Volatility results in large part from state policy choices. Since sharp shifts in policy can be a deterrent to economic activity, they have been included in the volatility index for assessing the states on the stability of their revenue.

Researchers generally have used several broad approaches to defining and measuring volatility, such as large or frequent year-to-year changes in tax revenue, large and persistent deviations in revenue from long-term trends, tax revenue that

changes rapidly in response to economic changes and tax revenue that deviates substantially from the amount predicted.

Overall, the assessment found that almost every state had at least a 15 percent reduction in volatility due to diversification of its taxes—the portfolio effect—and that three-quarters of them had a benefit of 26 percent or more. In Arizona, for example, the tax-by-tax volatility indices for the individual taxes were 6.8 for income tax, 3.3 for sales tax, 5.7 for nonproperty taxes. Yet, the state's overall tax volatility measure of 2.8 was about 50 percent lower than the tax-share weighted average—a nearly 50 percent reduction in volatility due to diversification.

A state such as Oregon, on the other hand, relied on the individual income tax for about 67 percent of its tax revenue over the time period examined—more than any other state. And it had the 7th most volatile state tax system with a volatility index of 7.0 compared with the median of 4.3. Washington, meanwhile, relied on the sales tax for 60 percent of its tax revenue—more than any other state—compared with 32 percent for the median state. Yet over the 20-year period examined, Washington's state tax revenue was the least volatile in the nation. So despite the general rule that relying on a single tax can lead to great volatility, for this period, when income taxes were particularly volatile, Washington's sales tax-dependent revenue was relatively stable.

The general rule remains, however: A diversified tax base generally is more stable than a non-diversified base. In the wrong kind of recession, a state like Washington's revenue could be hit especially hard. Still, three of the other four states that relied on the sales tax for more than 50 percent of their tax revenue—Florida, Tennessee and South Dakota—had below-average tax volatility over the 1986 to 2005 period. Only Nevada, among the states heavily reliant on sales tax, had above-average volatility.

Even states with "low" volatility are likely to find in the next recession that they have far too much of it. The goal in crafting a tax structure is to put together one that works in tandem with other counter-cyclical fiscal devices. That will help a state weather broad economic downturns and take advantage of upswings. It will also help taxpayers, particularly business taxpayers, rely on the tax structure to plan for the future.

PLUGGING A tax policy is only as good as the systems that collect the taxes and make it simple for people to pay them. LEAKS

Fifteen years ago, when a new business tried to put down roots in Kansas, the business owner had to mail in a paper registration and wait to be assigned a registration number. "It would take two or three weeks," says Steve Stotts, the state's director of tax operations. Now, thanks to reforms in the administration of the tax system in Kansas, a start-up business can register in 15 minutes.

States have been trying various ways to simplify collection and lock in compliance. The basic kit comes with five important tools: the effective use of the audit process, interstate cooperation, e-service offerings, a timely and fair appeals process and taxpayer buy-in to the design of the system and its administrative procedures.

Automating the Audits

Field audits of businesses can be unpleasant, especially for smaller firms with minimal access to professional tax guidance. The solution for many states is greater use of technology.

In some states, however, there's corporate resistance. In Mississippi, for instance,

about 60 percent of companies are willing to provide the information electronically but that's only "after discussion and assurance that we are going to protect their data and not mess up their system," says Shelton Vance, director of audit and compliance in

DIGITAL DIVIDE

One caution about the rush to e-service: There are taxpayers who don't have access to computers. "We can't leave those people and businesses too far behind," says Virginia's Tax Commissioner Janie Bowen.

Mississippi. The other 40 percent make it difficult to obtain their information electronically or simply don't have their data in an electronic form.

Fortunately, there are ways for states to stretch their audit dollars by using so-called "limited audits," that look only at specific issues within an industry. Want to audit cash-related transactions? In Michi-

gan, auditors aim right at restaurants—an industry that is known to be particularly susceptible to cash skimming.

Pennsylvania is trying a different low-cost approach: moderating its tone. When taxpayers are alerted to an audit, the letters, says Robert Coyne, deputy secretary for compliance and collections in Pennsylvania, "let taxpayers know exactly what we're looking for. They are more descriptive as opposed to threatening." In addition, Coyne's office does outreach and education so taxpayers understand the requirements. The benefits have been tangible. "People who got letters, read them, understood them, became compliant," says Coyne.

The E of Collection

Through one model or another, all the states are doing e-collection of taxes—even electronic filing for sales and business taxes are coming into their own. Six states—Nevada, New Jersey, New York, Pennsylvania, Tennessee and Virginia—already have fully electronic systems that assign, track, complete, review and transmit audits.

So is it time for most of the states to declare victory? Not likely, according to a 50-

state survey by the Pew Center on the States in collaboration with the Federation of Tax Administrators. Some states keep coming up with new and important improvements.

New York State's Online Tax Center has a system that allows taxpayers to use the Web and set up a pay plan, file a "no sales tax due" return, apply for a penalty waiver, look up rates, register for the sales tax, fill in forms and print out returns that can't be e-filed. "When you enter this tax center," says Pat Mitchell, chief financial officer of the New York State tax system, "we can customize it

cess to calls, e-mails, notice responses, electronic returns, and even hard copies of documents that have been scanned.

Talking to Taxpayers

Is anybody listening out there? If not, a tax agency runs a high risk of repeating its mistakes or missing good ideas from the most knowledgeable sources of all—the companies and individuals who interact with the tax system on a daily basis.

Some states routinely sit down and have heart-to-heart talks with their taxpayers

ducted by a neutral party, as well as Small Business Forums. When the office learned that the due date for returns for monthly filers was difficult for taxpayers to meet, it moved the date to a more amenable one.

While several states favor focus groups, the ultimate listening tool may be monthly and quarterly forums set up with chambers of commerce, industry groups, taxpayer representatives and policy or audit advisory groups.

Mutual Aid

With appropriate interstate cooperation, states can leverage their resources to address such multi-state issues as shared debtors or scofflaws.

New Mexico, for example, has partnered with the tax authorities from the Navajo Nation and the Arizona Department of Transportation to conduct joint audits on retail gas stations. While the audits are ongoing, the joint effort has been uncovering non-filers who would otherwise have slipped between the cracks.

New Mexico is also tackling regional issues by joining with Texas, California, Arizona, Oklahoma and the IRS to form the Border States Caucus. An independently organized team, it works with the Mexican government to deal with tax, motor vehicle and regulatory problems that flow out of the implementation of NAFTA.

An Appetite for Appeal

Much of compliance depends on giving taxpayers a fair shake at contesting decisions of the tax department. One of these is the ability to appeal without having to pay the assessment or a bond (called "pay to play"). This has been the subject of much reform. The other is ready access to a body that is independent of the tax administration agency.

A tax court or tribunal shouldn't report directly or indirectly to the department of revenue or to any subordinate executive agency. The logic here is pretty obvious: Executive branch agencies can be perceived as wanting to collect more taxes in order to balance the budget. Texas, for example, had placed responsibility for this function in the comptroller's office for years. Last year, the state moved it to an independent office of administrative hearings. "It is imperative," says Comptroller Susan Coombs, "to remove any appearance of bias and ensure that the integrity of the hearing process is beyond question."



Source: Pew Center on the States in coordination with the Federation of Tax Administrators

so it's all about you." The system can help taxpayers make estimated tax payments and access records and assessments that are due.

The ability of a taxpayer to work hand in hand electronically with a state tax department is the way some states are going. About one-third now allow taxpayers to send and sometimes receive an account-sensitive e-mail through a secured e-mail system, although sometimes the e-mail must originate through a state portal or agency Web site, for security reasons.

Virginia and Michigan not only put a great deal of information into taxpayers' hands, they do the same for state employees who assist taxpayers—from customer service agents to auditors. These employees have ac-

cess to what's working well and where they are falling short. Ohio hosts a large annual tax forum that covers both educational and administrative matters. North Dakota favors simple annual meetings with CPAs to discuss current matters.

North Carolina has reached out to neighborhoods. It used graduate students at Duke University to come up with recommended courses of action to improve compliance within North Carolina's immigrant community. The Department of Revenue then developed a strategy based on this work and hired a liaison to the Hispanic community.

Washington does a biennial taxpayer satisfaction survey, an independent study con-

ATTACHMENT 2

Excessive Taxes and Fees On Wireless Service: Recent Trends

by Scott Mackey

Scott Mackey is a partner and economist at Kimbell Sherman Ellis LLP in Montpelier, Vt. He works with a coalition of wireless carriers to roll back excessive state and local taxes on wireless companies and consumers and to promote tax parity between wireless services and other goods and services sold in the competitive marketplace. His clients include Alltel, AT&T, Sprint Nextel, T-Mobile USA, U.S. Cellular, and Verizon Wireless. He is the former chief economist at the National Conference of State Legislatures and testified before the U.S. House of Representatives on telecommunications tax issues in 2006 and 2007. The opinions expressed here are his own and do not necessarily represent the views of his clients.

Overview

Wireless consumers are subject to a growing number of industry-specific discriminatory taxes and fees on their service. Some states and localities are looking to expand those taxes — many of which originated during a time when the telecommunications industry was characterized by regulated monopolies — even though the wireless marketplace is highly competitive. The wireless industry is characterized by intense price competition and innovative new products and services that have led to dramatic declines in per-minute prices and rapid growth in the number of wireless subscribers and the number of minutes used.

A new analysis of taxes and fees on wireless service shows that the overall tax burden on wireless consumers has eased slightly since 2003 because of the elimination of the 3 percent federal excise tax (FET) on wireless service. However, the elimination of the FET has been partially offset by a significant increase in the Federal Communications Commission's universal service charge (USF) that is borne by wireless consumers as a surcharge on their wireless bills. Between 2003 and 2007, the FET dropped from 3 percent to zero while the federal USF charge increased from 2.07 percent to 4.19 percent, producing a net reduction in consumer burdens from 5.07 percent to 4.19 percent.

The net reduction in the federal burden on wireless consumers has also been offset by increases in state and local taxes and fees. State and local taxes and fees increased from 10.2 percent to 11 percent between 2003 and 2007, four times faster than the increase in overall sales and use taxes imposed on sales of other competitive goods and services. Wireless consumers enjoyed a reduction in their overall tax and fee burden between 2003 and 2007, from 15.27 percent to 15.19 percent.

The net reduction in the federal burden on wireless consumers has been offset by increases in state and local taxes and fees.

The wireless industry and its consumers continue to advocate for tax burdens that are the same as those imposed on other competitive businesses through the sales and use tax, with the exception of fees used directly for the 911 emergency communications system. It is an open question whether the recent reduction in federal taxes will be matched by a corresponding reduction in state and local taxes and fees on wireless service.

There is some evidence that wireless consumers are becoming more politically active in preventing new discriminatory taxes on their bills. Proposals for significant wireless tax increases in Michigan; Cook County, Ill.; and several Oregon cities were defeated largely because of political pressure from wireless subscribers. There is also pending federal legislation that would place a moratorium on new discriminatory taxes on wireless services. As those advocacy efforts continue, perhaps the trend toward higher state and local taxes and fees on wireless subscribers will be slowed or reversed.

Introduction

This report updates data first published in *State Tax Notes* in 2004 about the excessive state and local tax and fee burden imposed on wireless consumers

compared with purchasers of other goods and services sold in the competitive marketplace.

Wireless consumers continue to pay excessive and burdensome state and local taxes on their wireless service, even though economists and policymakers agree that there is no rational economic basis for excessive taxation of the industry and its consumers. Some state and local policymakers continue to impose excessive taxes on wireless service because they have imposed excessive taxes on telecommunications services for decades. Rather than reducing excessive taxes on local landline phone companies and their customers, which would reduce existing state and local revenue, some policymakers claim that they have leveled the playing field by expanding discriminatory taxes to wireless services.

The National Governors Association and the National Conference of State Legislatures have recommended that states reform and modernize their tax policies regarding telecommunications.¹ However, with the exception of Virginia, states with excessive taxes have not undertaken reforms to reduce tax burdens because of the significant fiscal impacts on the state or its local governments.

Tax policy and economic development policy are working at cross-purposes in some states because higher consumer taxes reduce cash flow for network investments.

At the same time, state and local policymakers recognize the importance of broadband service to their constituents and are redoubling their economic development efforts to promote broadband investment in their states and communities. Some are even passing legislation to subsidize or remove regulatory barriers to broadband investment while failing to consider the effect of excessive taxes on the ability of wireless and other communications service providers to invest in broadband networks. In other words, tax policy and economic development policy are working at cross-purposes in some states because higher consumer taxes reduce cash flow for network investments.

Some state policymakers have adopted a narrow view of the revenue implications of reform, focusing only on the short-term revenue loss to the state or local governments without considering the offsetting

longer-term fiscal benefits that communications tax reform would have on telecommunications investment. A recent report by *Governing Magazine* and the Pew Center on the States, entitled “Growth & Taxes,” said that “a reliable, high-quality and affordable telecommunications system is essential to the economic competition of states — to say nothing of the nation. And yet, these systems are subject to very high taxation rates in a number of states — by a tax approach set when the industry was dominated by one telephone company that was highly regulated.”

Several additional new studies show that improved broadband networks will lead to increased business productivity and faster economic growth as companies use communications networks in their business processes.² Lower taxes on wireless and other communications services will also directly reduce business costs for communications services.

The Evolving Wireless Marketplace

The wireless industry sells goods and services in a highly competitive, evolving marketplace that includes not just voice communications but also “entertainment” — in the form of music and video downloads, games, and various hybrid messaging capabilities. The Apple iPhone sold by AT&T is a prime example. In advertisements, the device is marketed as a multipurpose entertainment device that can access the Internet and play games and music. Voice telephone service is mentioned almost as an afterthought.

That migration from voice services to entertainment and other data services means that wireless providers are competing for discretionary consumer entertainment spending, bringing the industry into direct competition with cable providers, Internet service providers, and numerous Web-based content providers. In that environment, consumers are more price-sensitive than ever before, so consumer taxes matter more than ever before. If states and localities persist in imposing discriminatory taxes on wireless providers and customers, they will unwittingly drive consumers to purchase services sold by providers not subject to those taxes.

One only needs to look at the historical trends in the growth of the wireless industry to understand the relationship between price and consumer demand. According to the FCC, the average revenue per minute of wireless service dropped from 20 cents to 7 cents between 2000 and 2005. During that same period, the average minutes of use increased by

¹See Scott Paladino, “Telecommunications Tax Policies: Implications for the Digital Age,” National Governors’ Association, Feb. 2, 2000; National Conference of State Legislatures, “Telecommunications Tax Policy,” adopted July 19, 2000, amended and readopted July 20, 2004.

²See Lewin and Entner, “Impact of the Wireless Telecom Industry on the U.S. Economy,” Boston. Ovum and Indepen, September 2005; U.S. Department of Labor, “Productivity and Cost by Industry: Selected Service Providing and Mining Industries, 2004.”

Table 1. A Growing Burden: Wireless vs. General Business Tax Rates

	1/1/2003	4/1/2004	7/1/2005	7/1/2006	7/1/2007
Weighted Average					
General Sales/Use Tax	6.87%	6.93%	6.94%	7.04%	7.07%
Wireless -state/local tax & fee	10.20	10.74	10.94	11.14	11.00
Wireless - federal tax & fee	5.07	5.48	5.91	2.99	4.19
Wireless federal/state/local tax & fee	15.27	16.22	16.85	14.13	15.19
<p><i>Notes:</i> Methodology derived from Committee on State Taxation, “50-State Study and Report on Telecommunications Taxation,” Nov. 29, 2000. Updated 2003, 2004, 2005, 2006, and 2007 from state statutes and local ordinances by Scott Mackey, Kimbell Sherman Ellis LLP, Montpelier, Vt.</p> <p>Federal includes 3% federal excise tax (until 5/2006) and federal universal service fund charge, which is set by the FCC and varies quarterly:</p> <p>Federal USF 1/1/2003 — 28.5% FCC “hold harmless” times FCC contribution factor of 7.3% = 2.07%</p> <p>Federal USF 4/1/2004 — 28.5% FCC “hold harmless” times FCC contribution factor of 8.7% = 2.48%</p> <p>Federal USF 7/1/2005 — 28.5% FCC “hold harmless” times FCC contribution factor of 10.2% = 2.91%</p> <p>Federal USF 7/1/2006 — 28.5% FCC “hold harmless” times FCC contribution factor of 10.5% = 2.99%</p> <p>Federal USF 7/1/2007 — 37.1% FCC “hold harmless” times FCC contribution factor of 11.3% = 4.19%</p> <p><i>Source:</i> http://www.fcc.gov/omd/contribution-factor.html</p>					

more than 190 percent from 255 to 740 minutes per month.³ Consumers respond to lower prices by buying more, and at higher prices they bought less.

Excessive consumer taxes distort consumer purchasing decisions and reduce consumer purchases of goods and services sold by wireless providers. That reduces the amount of revenue available for investment in network upgrades. Wireless providers have been spending about \$20 billion per year over the last five years on network upgrades and service expansions even under the onerous tax burden imposed on the industry and its customers. Rather than seeking new ways to subsidize or provide incentives for broadband deployment, states could spur significant new investment simply by lowering taxes on company investments and could increase consumer demand by lowering the taxes on wireless service to the same rate as the general sales and use tax.

Recent Tax Trends

A new analysis of state and local taxes and fees on wireless services reveals a bit of good news. For the first time in five years, the state-local burden on wireless service fell slightly between July 2006 and July 2007 — from 11.14 percent to 11 percent. Table 1 summarizes the trend over the last five years.

This report uses the method developed by the Council On State Taxation in the landmark 1999 study, “50-State Study on Report on Telecommunications Taxation.” The report assigns each state a representative state-local tax rate that represents

³Federal Communications Commission, Eleventh Annual Commercial Mobile Radio Service Competition Report, September 2006, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-06-142A1.pdf. 2000 revenue figure presented in inflation-adjusted 2005 dollars.

the average rate imposed in the most populous city and the capital city. It includes taxes and fees that are legally imposed on the customer or that are imposed on the company if they are measured by gross revenues or receipts from wireless service.

Table 1 shows the weighted average state-local tax and fee burden since January 2003. Burdens steadily increased between 2003 and 2006 before dropping slightly in 2007. Those rates reflect the burden on the “typical” U.S. wireless consumer that spends the industry average of \$49.94 per line per month on wireless service.

Between 2003 and 2007, taxes and fees on wireless service increased four times faster than taxes on other goods and services. Burdens on wireless consumers rose from 10.2 percent to 11 percent, while those on competitive goods and services increased from 6.87 percent to 7.07 percent. By any measure, wireless service was targeted for a disproportionate share of tax increases when compared to broad-based consumption taxes.

Between 2003 and 2007, taxes and fees on wireless service increased four times faster than taxes on other goods and services.

Table 2 (next page) ranks state-local tax and fee burdens from highest to lowest. Nebraska and Washington have displaced Florida and New York from the top two spots, shifting those states to third and fourth highest, respectively. Missouri moved up to 5th place from 13th because of recent court settlements that require wireless companies to levy city business license taxes that are borne by wireless consumers. Rounding out the top 10 are Rhode

Table 2. Taxes and Fees on Wireless Service, July 2007

Rank	State	State-Local Rate	Federal Rate	Combined Federal-State-Local Rate
1	Nebraska	18.35%	4.19%	22.54%
2	Washington	16.43%	4.19%	20.62%
3	Florida	16.23%	4.19%	20.42%
4	New York	15.94%	4.19%	20.13%
5	Missouri	15.73%	4.19%	19.92%
6	Rhode Island	14.52%	4.19%	18.71%
7	Texas	14.27%	4.19%	18.46%
8	Pennsylvania	13.50%	4.19%	17.69%
9	Illinois	12.75%	4.19%	16.94%
10	California	12.67%	4.19%	16.86%
11	Utah	12.20%	4.19%	16.39%
12	South Dakota	11.91%	4.19%	16.10%
13	District of Columbia	11.52%	4.19%	15.71%
14	Tennessee	11.50%	4.19%	15.69%
15	Kansas	11.12%	4.19%	15.31%
16	New Mexico	11.01%	4.19%	15.20%
17	Colorado	10.89%	4.19%	15.08%
18	North Dakota	10.58%	4.19%	14.77%
19	Maryland	10.51%	4.19%	14.70%
20	Kentucky	10.36%	4.19%	14.55%
21	Arkansas	10.08%	4.19%	14.27%
22	Arizona	9.95%	4.19%	14.14%
23	Oklahoma	9.75%	4.19%	13.94%
24	South Carolina	9.45%	4.19%	13.64%
25	Mississippi	9.00%	4.19%	13.19%
26	New Jersey	8.80%	4.19%	12.99%
27	Indiana	8.55%	4.19%	12.74%
28	Minnesota	8.50%	4.19%	12.69%
29	North Carolina	8.37%	4.19%	12.56%
30	Georgia	8.26%	4.19%	12.45%
31	Wyoming	8.17%	4.19%	12.36%
32	Ohio	7.88%	4.19%	12.07%
33	New Hampshire	7.84%	4.19%	12.03%
34	Vermont	7.75%	4.19%	11.94%
35	Hawaii	7.70%	4.19%	11.89%
36	Alabama	7.40%	4.19%	11.59%
37	Wisconsin	7.39%	4.19%	11.58%
38	Iowa	7.36%	4.19%	11.55%
39	Maine	7.27%	4.19%	11.46%
40	Connecticut	6.80%	4.19%	10.99%
41	Alaska	6.76%	4.19%	10.95%
42	Michigan	6.58%	4.19%	10.77%
43	Virginia	6.50%	4.19%	10.69%
44	Louisiana	6.16%	4.19%	10.35%
45	West Virginia	6.01%	4.19%	10.20%
46	Montana	5.95%	4.19%	10.14%
47	Massachusetts	5.60%	4.19%	9.79%
48	Delaware	5.45%	4.19%	9.64%
49	Idaho	2.12%	4.19%	6.31%
50	Nevada	2.00%	4.19%	6.19%
51	Oregon	1.66%	4.19%	5.85%
	U.S. Simple Average	9.47%	4.19%	13.66%
	U.S. Weighted Average	11.00%	4.19%	15.19%

Note: Federal USF July 1, 2007 — 37.1% FCC “hold harmless” times FCC contribution factor of 11.3% = 4.19%

Federal rate reflects repeal of federal excise tax on wireless effective May 2006.

For flat monthly taxes and fees, average monthly consumer bill is estimated at \$49.94 per month per CTIA.

Source: Committee On State Taxation, “50-State Study and Report on Telecommunications Taxation,” May 2005 update, updated September 2007 by Scott Mackey, Kimbell Sherman Ellis LLP using state statutes and regulations.

Island, Texas, Pennsylvania, Illinois, and California. The District of Columbia was the only state to drop out of the top 10.

Oregon, Nevada, Idaho, Delaware, and Massachusetts are the states with the lowest taxes on wireless consumers. Idaho has a sales tax but does not impose it on wireless or other telecommunications service. Oregon has no sales tax, and only one city imposes a local utility tax on wireless service. Delaware does not levy sales and use taxes but impose communications services taxes on wireless service at relatively low rates. Massachusetts levies the (relatively low) state sales tax on wireless service and has a modest 30-cent monthly 911 fee. Finally, Nevada authorizes a local excise tax of 5 percent of the first \$15 in intrastate revenue, and caps the tax at a modest \$0.75 per month.

Highlights of Recent State Tax and Fee Changes

Appendix A provides a detailed breakdown of the taxes and fees imposed in each state. It is important to again point out that the method used in this report follows the COST method, which uses the average rates in the state's capital city and the state's most populous city. Rates in a specific city in states with local taxes and fees may vary from the numbers reported here.

Consumers in eight states benefited from reductions in state USF charges, including significant reductions in California and Texas that had a national impact on typical wireless consumer tax rates. Other states with USF reductions include Arkansas, Colorado, Kansas, Maine, New Mexico, and Oklahoma. Some of those reductions were the result of state administrative decisions to lower rates, while others were attributable to the decrease of the intrastate portion of the FCC safe harbor percentage that is used to determine the mix between interstate and intrastate calls in a fixed rate wireless calling plan. The state USF is levied on intrastate calls, while the federal USF is levied on interstate calls.

Unfortunately, the increase in the interstate portion of the federal USF safe harbor means that those state-level reductions are offset by higher federal USF charges. The federal effective USF rate for a wireless company electing to use the FCC safe harbor percentage increased from 2.48 percent in 2004 to 4.19 percent in 2007.

The good news for wireless consumers is that for the first time since 2003, no states imposed a new industry-specific tax or increased the rate of an existing discriminatory wireless tax. In fact, Virginia eliminated a telecommunications-specific tax while Utah reduced the rate of local wireless tax. Virginia approved a sweeping telecommunications tax reform bill that reduced wireless consumer taxes from a maximum of \$3 per month per consumer to 5 percent, the same rate as the combined state and

local sales tax rate. As a result of that reform, wireless consumers pay the same tax rates on their service as purchases of other competitive goods and services subject to the sales tax. The Utah Legislature lowered the local wireless tax from a maximum of 4 percent to a maximum of 3.5 percent. Another major consumer tax reduction — the elimination of the 1.25 percent telecommunications infrastructure fund tax — was approved by the Texas Legislature in the 2007 session but will not take effect until 2008, so it is not reflected in the 2007 data.

Perhaps state and local policymakers are getting the message that it is bad tax policy to single out one industry for excessive taxation.

Alaska, Connecticut, Idaho, Montana, and Wisconsin increased 911 fees between July 2006 and July 2007. The increases in Connecticut (up 3 cents per month) and Wisconsin (up 9 cents per month) were relatively modest. Montana doubled the statewide 911 fee from 50 cents to \$1 per month. In Alaska, Juneau raised its 911 fee from 75 cents to \$1.90 per month after legislation approved by the Legislature in 2005 raised the cap on 911 fees to \$2 per month. Boise, Idaho, raised its 911 fee from 75 cents to \$1 per month.

Three states lowered their 911 fees. Arizona lowered the monthly fee from 28 cents to 20 cents per month, while Indiana reduced its fee from 65 cents per month to 50 cents per month. Utah lowered both the state 911 fee (from 13 cents to 8 cents per month) and the maximum permissible local 911 fee (from 65 cents to 61 cents per month).

Outlook for 2008 and Beyond

The reduction in state-local wireless tax burdens in 2007 is a bit of good news for wireless consumers after three previous years of increasing taxes and fees. Perhaps state and local policymakers are getting the message that not only is it bad tax policy to single out one industry for excessive taxation, but it is bad economic policy to impose burdensome taxes on an industry that is investing in infrastructure that helps businesses improve productivity. Recent evidence suggests otherwise, however, raising concerns that wireless consumers may continue to be targeted for new taxes and fees, especially if states and localities experience deteriorating revenues because of the real estate market and the broader economy. Actions in Maryland, Michigan, and Illinois at the end of 2007 suggest that wireless consumers should be concerned.

In Illinois the General Assembly doubled the Chicago 911 fee from the already excessive level of

\$1.25 per month to \$2.50 per month, effective on January 1, 2008. As a result, Chicago customers will pay over 22.5 percent in taxes and fees on their bill in 2008. Also, the Cook County commissioners considered but so far have rejected an additional tax of \$4 per month that would have increased the tax burden on Chicago residents by another 8 percent — bringing it to over 30 percent. It's troubling for consumers that state and local policymakers would even consider increasing taxes and fees in Chicago when rates already exceed 20 percent.

Legislation in Michigan to impose a new telephone tax of \$1.35 per month to fund public safety and other programs not related to emergency communications was narrowly defeated in December. That proposal may represent a new trend — wireless and other telecommunications customers being tapped to fund public safety programs that have been historically funded out of broad-based general fund revenues. Although that proposal was defeated, the Legislature authorized counties to impose new 911 fees on wireless consumers.

In Prince George's County, Md., the council approved a proposal to raise the county telecommunications tax from 8 percent to 11 percent. However, pressure from consumers led the council to postpone the effective date of the increase and place the proposal on the November 2008 ballot.

State and local revenue is starting to show signs of stress at the end of 2007 because of the downturn in housing prices and growing worries about an economic downturn. Therefore, the 2008 legislative sessions should be an important barometer of whether policymakers have stopped targeting wireless consumers for excessive new taxes or whether the industry and its consumers will once again be facing new tax threats.

If state lawmakers and local officials target wireless consumers for new taxes and fees, they can expect more resistance than in the past. Wireless consumers have become more aggressive and organized in their efforts to oppose discriminatory taxes and fees. Wireless carriers and their national trade association, CTIA - The Wireless Association, have identified lowering discriminatory taxes and fees as a major national priority for the industry.

Appendix A. State and Local Transaction Taxes, Fees, and Government Charges on Wireless Service — July 1, 2007			
State	Type of Tax	Rate	Comments
Alabama	AL cell service tax	6.00%	Access, interstate and intrastate
	E911	1.40%	70 cents/month
	Total transaction tax	7.40%	
Alaska	Local sales tax	2.50%	Avg. of Juneau (5%) & Anchorage (0%)
	Local E911	3.40%	Up to \$2/month eff. 9/22/05 (Anchorage — \$1.50; Juneau — \$1.90)
	State universal service fund	0.86%	1.2% rate times 71.5% FCC intrastate safe harbor
	Total transaction tax	6.76%	
Arizona	State sales (transaction priv.)	5.60%	Intrastate telecommunications service
	County sales (transaction priv.)	0.60%	Phoenix (Maricopa Cty.) = 0.7%; Tucson (Pima Cty.) = 0.5%
	City telecommunications	3.35%	Avg. Phoenix (4.7%) & Tucson (2%)
	911	0.40%	Reduced from 28 cents to 20 cents/month on 7/1/07
	Total transaction tax	9.95%	
Arkansas	State sales tax	6.00%	6% effective 3/1/2004
	Local sales taxes	2.38%	Avg. Little Rock (1.5%) & Fayetteville (3.25%)
	State high cost fund	0.70%	Intrastate (reduced from 1.7% to 0.7% effective 1/1/07)
	Wireless 911	1.00%	50 cents/month statewide. New local 911 — up to 30 cents/mo effective 9/1/03
	Total transaction tax	10.08%	
California	Local utility user tax	8.75%	Avg. of Los Angeles (10%) and Sacramento (7.5%)
	State 911	0.65%	Reduced to 0.5% on 11/1/2007
	Public utility commission fee	0.11%	Intrastate
	Universal lifeline telephone service	1.15%	Intrastate
	Deaf/California relay service	0.37%	Intrastate
	California high cost fund — A & B	1.51%	Intrastate
	California teleconnect fund	0.13%	Intrastate
	Total transaction tax	12.67%	
Colorado	State sales tax	2.90%	Access and intrastate
	Local sales taxes	3.56%	Avg. of Denver (3.62%) & Colorado Springs (3.5%)
	Local sales — Regional Transportation District, Scientific and Cultural Facilities District, Baseball Stadium District	1.10%	Denver (1.2%) & Colorado Springs (1%)
	911	1.40%	Denver (70 cents) & Colorado Springs (70 cents)
	Universal service fund	1.93%	2.7% rate times 71.5% FCC safe harbor
	Total transaction tax	10.89%	
Connecticut	State sales tax	6.00%	Access, interstate, and intrastate
	911	0.80%	Increased from 37 cents to 40 cents per month effective 6/1/2007 docket 07-01-03
	Total transaction tax	6.80%	
Delaware	Public utility gross receipts tax	4.25%	Access and intrastate
	Local 911 tax	1.20%	60 cents/month
	Total transaction tax	5.45%	

**Appendix A. State and Local Transaction Taxes, Fees, and Government Charges
on Wireless Service — July 1, 2007
(continued)**

State	Type of Tax	Rate	Comments
District of Columbia	Telecommunications Privilege Tax	10.00%	Monthly gross charge; 11% for nonresidential
	911	1.52%	76 cents per month; levied on carriers but passed to subscribers
	Total transaction tax	11.52%	
Florida	State communications services	9.17%	Access, interstate and intrastate
	Local communications services	6.06%	Jacksonville 5.82% & Tallahassee 6.29%
	911	1.00%	Up to 50 cents/month statewide
	Total transaction tax	16.23%	
Georgia	State sales tax	2.80%	4% of access charge — assume \$35
	Local sales tax	2.45%	Average rate Atlanta (4%) & Augusta (3%)
	Local 911	3.00%	Atlanta — \$1.50/line; Augusta — \$1.50/line
	Total transaction tax	8.26%	
Hawaii	Public service co. tax	4.00%	
	General excise tax	1.88%	
	Public utility commission fee	0.50%	0.5% of intrastate
	Wireless 911	1.32%	66 cents per month, effective 7/1/04
	Total transaction tax	7.70%	
Idaho	Telephone service asst. program	0.12%	Set annually by Public Utility Commission — currently 6 cents/month
	Statewide wireless 911	2.00%	Boise = increased from 75 cents/month to \$1/month
	Total transaction tax	2.12%	
Illinois	State telecom excise tax	7.00%	Access, interstate, and intrastate
	Simplified municipal tax	3.75%	Avg. of Chicago (6.5%) & Springfield (1%)
	Wireless 911	2.00%	Chicago \$1.25/month; others 75 cents/month
	Total transaction tax	12.75%	
Indiana	State sales tax	6.00%	Access and intrastate
	Utility receipts tax	1.40%	Same base as sales tax
	Wireless 911	1.00%	Up to \$1 set annually by board; currently 50 cents/month
	Public utility commission fee	0.15%	
	Total transaction tax	8.55%	
Iowa	State sales tax	5.00%	Access, intrastate
	Local option sales taxes	1.00%	Average of Cedar Rapids (1%) & Des Moines (1%)
	Wireless 911	1.30%	65 cents per month
	Dual party relay service fee	0.06%	3 cents per month
	Total transaction tax	7.36%	
Kansas	State sales tax	5.30%	Intrastate and interstate
	Local option sales taxes	2.08%	Average of Wichita (2.0%) & Topeka (2.15%)
	Universal service fund	2.74%	4.35% x 62.9% FCC safe harbor reduced from 4.34%
	Wireless 911	1.00%	25 cents/month state and 25 cents/month county
	Total transaction tax	11.12%	

**Appendix A. State and Local Transaction Taxes, Fees, and Government Charges
on Wireless Service — July 1, 2007
(continued)**

State	Type of Tax	Rate	Comments
Kentucky	State sales tax	6.00%	Access, interstate, and intrastate
	School utility gross receipts	1.50%	Average Frankfort (3%) & Louisville (0%)
	Lifeline support charge	0.16%	8 cents per month Frankfort & Louisville
	Wireless 911	1.40%	70 cents/month
	Communications gross receipts tax	1.30%	1.3% effective 1/1/2006
	Total transaction tax	10.36%	
Louisiana	State sales tax	3.00%	Intrastate rate
	Wireless 911	1.70%	New Orleans 85 cents/month & Baton Rouge 85 cents/month
	State universal service fund	1.46%	
	Total transaction tax	6.16%	
Maine	State service provider tax	5.00%	Intrastate
	911 tax	1.00%	50 cents/month
	Maine universal service fund	0.83%	1.33% x 62.9% FCC intrastate safe harbor
	Maine telecommunications education access fund	0.44%	0.7% x 62.9% FCC intrastate safe harbor
	Total transaction tax	7.27%	
Maryland	State sales tax	5.00%	Mobile telecommunications service
	Local telecom excise	3.50%	\$3.50 per month in Baltimore; No tax in Annapolis
	State 911	0.50%	25 cents/month
	County 911	1.50%	Baltimore 75 cents/month; Annapolis 75 cents/month
	Total transaction tax	10.51%	
Massachusetts	State sales tax	5.00%	Interstate and intrastate
	Wireless 911	0.60%	30 cents/month
	Total transaction tax	5.60%	
Michigan	State sales tax	6.00%	Interstate and intrastate
	Wireless 911	0.58%	29 cents/month (reduced from 52 cents/month on 1/1/2006)
	Total transaction tax	6.58%	
Minnesota	State sales tax	6.50%	Interstate and intrastate
	Local sales tax	0.58%	Minneapolis (0.65%) & St. Paul (0.5%)
	911	1.30%	Max. 65 cents/month effective 6/2005 — Public Utility Commission has authority
	Telecom access Minnesota fund	0.12%	Set by Public Utility Commission — currently 6 cents/month
	Total transaction tax	8.50%	
Mississippi	State sales tax	7.00%	Access, interstate and intrastate
	Wireless 911	2.00%	\$1 per month per line
	Total transaction tax	9.00%	
Missouri	State sales tax	4.23%	Access and intrastate
	Local sales taxes	3.00%	Average Jefferson City (2.5%) & Kansas City (3.5%)
	Local business license tax	8.50%	Average of Jefferson City (7%) & Kansas City (10%)
	Total transaction tax	15.73%	

**Appendix A. State and Local Transaction Taxes, Fees, and Government Charges
on Wireless Service — July 1, 2007**
(continued)

State	Type of Tax	Rate	Comments
Montana	Telecom excise tax	3.75%	Access, interstate, and intrastate
	911 and E911 tax	2.00%	\$1 per number per month
	Telecommunication devices for the deaf tax	0.20%	10 cents per number per month
	Total transaction tax	5.95%	
Nebraska	State sales tax	5.50%	Access and intrastate
	Local sales tax	1.50%	Lincoln (1.5%) and Omaha (1.5%)
	City business and occupation tax	5.88%	Avg. of Omaha (6.25%) and Lincoln (5.5%)
	State universal service fund	4.37%	6.95% x 62.9% FCC intrastate safe harbor
	Wireless 911	1.00%	Up to 70 cents per month effective 7/1/2006; currently 50 cents
	Telecommunications relay service (deaf)	0.10%	5 cents per month effective 7/1/2007
	Total transaction tax	18.35%	
	Nevada	Local franchise/gross receipts	1.50%
Local 911 tax		0.50%	Up to 25 cents/month — imposed by counties
State deaf relay charge		0.06%	3 cents per month — effective 1/1/05
Total transaction tax		2.00%	
New Hampshire	Communication services tax	7.00%	Access, interstate, and intrastate
	911 tax	0.84%	42 cents per month per CMRS number
	Total transaction tax	7.84%	
New Jersey	State sales tax	7.00%	Increased to 7% effective 7/15/2006
	Wireless 911	1.80%	90 cents per month effective 7/1/2004
	Total transaction tax	8.80%	
New Mexico	State gross receipts (sales) tax	5.00%	5% intrastate; 4.25% interstate
	City and county gross receipts tax	2.38%	Avg. Santa Fe (2.875%) & Albuquerque (1.875%)
	Wireless 911	1.02%	51 cents per month per subscriber
	Telecommunications relay service (deaf) surcharge	0.33%	Intrastate
	State universal service fund	1.89%	3% times 62.9% FCC intrastate safe harbor
	Carrier utility charge	0.40%	
	Total transaction tax	11.01%	
New York	State sales tax	4.00%	Intrastate and monthly access
	Local sales taxes	4.06%	New York City (4.125%); Albany (4%)
	Metropolitan commuter transportation district (New York City and surrounding counties) sales tax	0.13%	New York City — .25%; Albany 0%
	State excise tax (186e)	2.50%	Mobile telecom service — includes interstate
	Metropolitan commuter transportation district (New York City and surrounding counties) excise/surcharge (186e)	0.30%	New York City & surrounding counties — 0.6%; Albany 0%
	Local utility gross receipts tax	1.51%	New York City — 86% of 2.36%; Albany 1%
	State wireless 911	2.40%	\$1.20 per month
	Local wireless 911	0.60%	30 cents per month — NYC & most counties
	Metropolitan commuter transportation district (New York City and surrounding counties) surcharge (184)	0.07%	New York City 0.13%; Albany — no tax
	New York franchise tax (184)	0.38%	
	School district utility tax	0.00%	Up to 3% — no tax in New York City and Albany
	Total transaction tax	15.94%	

**Appendix A. State and Local Transaction Taxes, Fees, and Government Charges
on Wireless Service — July 1, 2007
(continued)**

State	Type of Tax	Rate	Comments
North Carolina	State sales tax	6.75%	Access, interstate and intrastate
	Wireless 911	1.40%	Reduced from 80 cents/month to 70 cents/month on 10/1/05.
	Telecommunications relay service (deaf) Charge	0.22%	11 cents/month drops to 9 cents/month on 1/1/08
	Total transaction tax	8.37%	
North Dakota	State sales tax	5.00%	Access and intrastate
	Local sales taxes	1.00%	Average Fargo (1%) & Bismarck (1%)
	State gross receipts tax	2.50%	Interstate and intrastate
	Local 911 tax	2.00%	Up to \$1/month
	Telecommunications relay service (deaf)	0.08%	Up to 11 cents/month — currently 4 cents
	Total transaction tax	10.58%	
Ohio	State sales tax	5.50%	Access, interstate, and intrastate
	Local sales taxes	1.63%	Columbus (1.25%) & Cleveland (2%)
	Regulatory fee	0.11%	
	State/local wireless 911	0.64%	32 cents per month effective 8/1/05
	Total transaction tax	7.88%	
Oklahoma	State sales tax	4.50%	Access, interstate, and intrastate
	Local sales taxes	3.95%	Average of Oklahoma City (3.875%) & Tulsa (4.017%)
	Local 911	1.00%	Up to 50 cents per month
	Universal service fund	0.30%	0.3% of intrastate charges
	Total transaction tax	9.75%	
Oregon	Local utility tax	0.00%	No tax on wireless in Portland or Salem
	911 tax	1.50%	75 cents per month
	Telecommunication devices for the deaf/low income subsidy	0.16%	Up to 35 cents /month — currently 8 cents /mo
	Total transaction tax	1.66%	
Pennsylvania	State sales tax	6.00%	Access, interstate, and intrastate
	State gross receipts tax	5.00%	Access, interstate, and intrastate
	Local sales tax	0.50%	Philadelphia 1% & Harrisburg 0%
	Statewide wireless 911	2.00%	\$1 per month — effective 4/1/04
	Total transaction tax	13.50%	
Rhode Island	State sales tax	7.00%	Access, interstate, and intrastate
	Gross receipts tax	5.00%	Access, interstate, and intrastate
	911 fee	2.00%	\$1 per month
	Additional wireless 911 fee	0.52%	26 cents per month effective 7/1/2004
	Total transaction tax	14.52%	
South Carolina	State sales tax	6.00%	Access, interstate, and intrastate
	Local sales tax	1.25%	Average of Charleston (1.5%) & Columbia (1%)
	Municipal license tax	1.00%	Charleston (1%) & Columbia (1%)
	911 tax	1.20%	60 cents/month
	Total transaction tax	9.45%	

**Appendix A. State and Local Transaction Taxes, Fees, and Government Charges
on Wireless Service — July 1, 2007**
(continued)

State	Type of Tax	Rate	Comments
South Dakota	State sales tax	4.00%	Access, interstate, and intrastate
	State gross receipts tax	4.00%	Wireless only effective 7/1/03
	Local option sales tax	1.96%	Average of Pierre (2.0%) & Sioux Falls (1.92%)
	911 excise	1.50%	Up to 75 cents per month
	Telecommunications relay service (deaf) fee	0.30%	15 cents per month
	Public utility commission fee	0.15%	Intrastate receipts
	Total transaction tax	11.91%	
Tennessee	State sales tax	7.00%	Access, interstate, and intrastate
	Local sales tax	2.50%	Statewide local rate for intrastate
	911 tax	2.00%	\$1/month (statute caps rate at \$3/month)
	Total transaction tax	11.50%	
Texas	State sales tax	6.25%	Access, interstate, and intrastate
	Local sales tax	2.00%	Austin (2%) & Houston (2%)
	Telecom infrastructure fund	1.25%	Repealed effective 10/1/2008
	Wireless 911 tax	1.00%	50 cents per month
	Texas universal service fund	2.77%	4.4% times FCC intrastate safe harbor (62.9%)
	911 equalization surcharge	1.00%	Intrastate long distance
	Total transaction tax	14.27%	
Utah	State sales tax	4.75%	Access and intrastate
	Local sales taxes	1.93%	Average of Salt Lake City (2.1%) & Provo (1.75%)
	Local utility wireless	3.50%	Up to 3.5% maximum (reduced by the Legislature in 2007)
	Local 911	1.22%	Max reduced from 65 cents/mo. to 61 cents/month
	State 911	0.16%	Reduced from 13 cents/month to 8 cents/month on 7/1/07
	Poison control	0.14%	7 cents/month
	Total transaction tax	12.20%	
Vermont	State sales tax	6.50%	Access, interstate, and intrastate
	State universal service fund (also funds 911)	1.25%	1.25% effective 7/1/2006 through 9/1/2008
	Total transaction tax	7.75%	
Virginia	State communications sales tax	5.00%	
	Wireless 911	1.50%	75 cents/month
	Total transaction tax	6.50%	
Washington	State sales tax	6.50%	Access, interstate, and intrastate
	Local sales taxes	2.15%	Average Olympia (1.9%) & Seattle (2.4%)
	Business and occupation tax/utility franchise — local	6.38%	Olympia (6.38%) & Seattle (6.38%) average
	911 — state	0.40%	20 cents/month
	911 — local	1.00%	Up to 50 cents/month
	Total transaction tax	16.43%	
West Virginia	Wireless 911	6.01%	\$3 per month
	Total transaction tax	6.01%	

**Appendix A. State and Local Transaction Taxes, Fees, and Government Charges
on Wireless Service — July 1, 2007
(continued)**

State	Type of Tax	Rate	Comments
Wisconsin	State sales tax	5.00%	Access, intrastate, and interstate
	Local sales tax	0.55%	Average of Milwaukee (0.6%) & Madison (0.5%)
	Wireless 911	1.84%	92 cents per month, set by PSC
	Total transaction tax	7.39%	
Wyoming	State sales tax	4.00%	Access and intrastate
	Local sales tax	1.50%	Average of Cheyenne (2%) & Casper (1%)
	Telecommunications Relay Service (deaf)	0.12%	Up to 25 cents/month — 6 cents currently
	Universal service fund	1.05%	Intrastate retail revenue
	911 tax	1.50%	75 cents/month — levied by counties
	Total transaction tax	8.17%	
Average Revenue Per Unit (wireless industry metric = revenue per subscriber) = \$49.94 Sources: Committee On State Taxation, "50-State Study and Report on Telecommunications Taxation," May 2005 Update Updated September 2007 by Scott Mackey, Kimbell Sherman Ellis, using state statutes and regulations. Average Revenue Per Unit (wireless industry metric = revenue per subscriber) data: Cellular Telephone and Internet Association, June 2007.			

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ATTACHMENT 3

Investing in Economic Growth:
Broadband Network Tax Forbearance
Larry F. Darby*
Joseph P. Fuhr Jr.*

I
INTRODUCTION

This paper argues and concludes that raising taxes on broadband and related telecom network services will destroy, directly and indirectly, more value for taxpaying citizens than expenditure of the funds can reasonably be expected, or been shown analytically, to create. Put differently, the paper inquires and answers whether broadband tax forbearance is a good government investment.

Investment, private or public, is generally warranted if its expected value over time exceeds its expected, mainly current, cost. The greater the expected return, the greater the impetus to invest. Forbearing broadband taxation is a form of public investment which will most likely yield very attractive returns, when compared to other forms of taxation and/or expenditure plans.

Federal, state and local fiscal authorities routinely tailor expenditure plans and programs to reflect not only short term needs, but also to foster long term growth and development via capital expenditures for infrastructure development – streets, sewers, buildings, schools, medical facilities, sports facilities, and others. The rationale for government expenditure of taxpayer dollars for long term capital development programs is straightforward. Investment of taxpayer dollars is warranted when the present value of future benefits from the investment expenditure can reasonably be expected to be greater than the present value of alternative, but foregone, private or public expenditures. Other considerations matter, but a major consideration in matters of public finance and expenditure is comparison of real costs and benefits.²

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² Joseph E. Stiglitz, *Economics of the Public Sector*, W. W. Norton and Co., 1988 2nd Ed., especially chapter 10, Cost-Benefit Analysis. “...the government...needs to know whether a particular project [or tax] should be undertaken – whether the benefits exceed the costs.” p. 257.

State and local governments face increasing public needs in the areas of education, health care, transport, fire or police protection and others. Macroeconomic forces currently in play are contributing to prospects for rising deficits in state and local government budgets. Closing expected budget gaps will require a combination of spending controls and, in some cases, increased government revenue. Balancing budgets may require raising taxes while cutting spending on other programs. Either comes at a cost to public welfare.

For a variety of reasons, traceable largely to historic precedent growing out of fiscal attitudes toward regulated monopolies providing service in technologically stable environments, electronic communications (voice, video, data, broadband, etc.) networks and services are burdened with substantially higher than average tax rates. And, the inclination among state and local fiscal authorities is to look to those services for added revenue to close budgetary gaps.

Owing to a federally imposed moratorium, the level of state and local taxation on Internet access services is well below that of legacy telecommunications services, which have historically borne a disproportionate burden vis-à-vis most other sales and services. While the federal moratorium protects most Internet access services from state and local taxation, a host of new, broadband services and products remain outside the moratorium. Business models of broadband network providers anticipate substantial growth in these new services and look to them to provide revenues necessary to underwrite needed investment. Owing to these same growth prospects, these services are attractive targets for state and local fiscal authorities.

Broadband networks exert enormous leverage in creating value for consumers in other sector, in other economic activities, and in pursuit of other worthy public objectives -- environmental preservation, quality education, public security, health care, senior welfare, rural development and others. In the context of this special ability of broadband networks to create extraordinary distant and collateral benefits, the case for tax forbearance is straightforward. Taxes on broadband will reduce supply and demand for broadband networks, by reducing funds available for investment and by raising prices for broadband services. The result will ripple and reverberate economy-wide and be felt by citizens who are denied the benefits, recognized and pursued by governments at all levels and in most countries, sure to be generated by the Broadband Economy.

Academics frequently disagree, but there is no material dissent apparent in the body of work characterizing the economic effects of taxing broadband; of the direct effects of broadband network expansion on consumer welfare; or, of the enormous macro- and sectoral impacts of increased broadband network availability and use. A fair assessment of the research converges on a single conclusion. "Don't tax what you want to encourage!"

Every sector of the economy has its idiosyncrasies, many of which are routinely cited by advocates of tax relief and preferences. Much of the foregoing is of that ilk. Broadband telecommunications networks are very different and in ways that almost everybody agrees warrant special policy considerations. Indeed, this very special nature is recognized at all levels of government not only in words, but by sundry actions under the broad banner of broadband policy designed to promote initiation, expansion and deepening of broadband networks and increased availability of more, better, and cheaper broadband services.

While governments at different levels are willing and eager to promote broadband by spending taxpayer dollars, there is more than a touch of irony in the reluctance of some to forego taxing broadband networks and services to achieve the same end. If spending taxpayer dollars to promote broadband development is a good investment, insistence that tax forbearance is not an equally good investment requires explanation that has not been forthcoming.

It is probably safe to say that no other sector has the leverage of the broadband network value-chain to promote economic growth, development, jobs, productivity and innovation in other sectors of the economy. That is not to denigrate the importance of other private sector undertakings or the value of government expenditures on education, health care, security, and other worthy programs. But, it does call into question the wisdom, and the true public interest, of taking money from this unique and highly levered broadband sector to add to the general fund from which government expenditures, many of demonstrably marginal value, are drawn.

We have searched the literature carefully for evidence that the economic welfare of services availed by government expenditures exceeds on average, or at the margin, the economic welfare induced by and attributable to foregoing taxation of broadband networks and related telecom services. So far as we can determine, there is no compelling evidence available.

A. Purpose

The purpose of this paper is reflected in its title. We will set forth central features of the economic welfare-based implications of taxing, or not taxing, broadband services in particular and telecommunications services more generally. The objective is to set out a case for forbearance of broadband and telecommunications taxes more generally as a good government investment. Put simply, foregoing now the temptation to tax broadband and associated telecommunications services will stimulate growth in network investment, economic activity, income streams, and wealth. Such growth will in turn yield enlarged future tax bases in other sectors of the economy from which increased

tax revenues will be forthcoming. Our method is to link nationwide and state and local economic growth, development, and diversification to policies and practices with respect to taxation of broadband Internet services and related networks.

Our intention is to provide a principled, fact-intensive basis for concluding that state and local governments can best promote conditions conducive to economic development – investment, jobs, real income, and stable prices -- by minimizing (lowering and declining to increase) tax obligations imposed on networks and providers of broadband, Internet services.

We emphasize at the outset that our argument applies as well to taxes on ordinary telecommunications or cable services, since broadband, Internet services are provided over general purpose networks that also make available (a) traditional, narrowband voice and data telecommunications services in the case of telephone platforms and (b), sports, entertainment, news, public, and educational services in the case of cable platforms. Broadband services are not delivered on stand alone networks. They are provided through use of multiservice, multi-user facilities that make available non-broadband services to non-broadband users. Revenue from non-broadband services contributes to covering the common costs shared by all uses and users of the network. This is important from a policy perspective and from a tax perspective in particular, since it implies that not only do broadband taxes matter, but that taxes on non-broadband services provided over these multiservice, multi-user facilities will also reduce the overall incentives to invest in these networks. Taxes on plain old telephone voice services or on ordinary cable entertainment services or on mobile phone services will strip platform providers of revenue and cash flow that could otherwise be used to expand or deepen the broadband capacity of common user networks. Accordingly, the paper will refer variously to broadband taxes, Internet taxes, and related taxes depending on particular contexts.³

Satisfying our principal objective entails showing that government forbearance from taxing electronic information distribution networks that provide

³ A more familiar notion in this context might be “convergence”, a term frequently used to connote the integration of different service offerings over a single network. Thus, telcos provide voice, data, video, and internet access services over the same network, as do cable network providers. Digital technology permits provision over a single network services that previously were provided over different networks or sub-networks. Each of the individual services provides revenue to cover costs, and cash to fund investment, for all the individual services combined. Thus, a tax on telco voice service, or on a cable video service, comes from a common pool of revenue from which investment enabling expansion of broadband Internet services is drawn. A similar conclusion applies geographically. Taxes imposed on a regional or national network by one state or locality imposes a burden not only in that locality, but also reduces cash available for network investment outside it. Thus, as discussed further below, state and local taxes have “external” impacts, as will state and local tax forbearance.

broadband and other services will stimulate investment and (a) lead in turn to expansion of broadband networks serving taxpayers as end users of broadband services, but also as a result of that expansion (b) stimulate taxable economic activity and value in other sectors of the economy. The paper aspires to be more than another call from special interests whose pleas for tax reform were summarized by Senator Russell Long: "Don't tax you, don't tax me. Tax that fellow behind the tree." This is not an anti-tax treatise. It reflects awareness of the difficult fiscal challenges confronting state and local governments, but attempts in that context to address the gamut of citizen welfare implications of alternative tax schemes impacting provision of broadband, Internet services.

B. Structure of Paper

We begin with a brief discussion of important background matters designed to put broadband, Internet and related taxes on electronic communications networks and services in economic and political context.

Section II provides perspective and context. It addresses a) the ongoing debate over comparative development of the US broadband sector vis-à-vis the rest of the world; b) investor views of risks and returns in broadband markets; c) the extraordinary degree of current taxation of telecommunications services and its impact on lower income families; d) the national scope and benefits of broadband telecommunications; e) the very substantial subsidies flowing to broadband networks and services from all levels of government; and, f) the high priority on all national broadband policy agendas accorded broadband investment and development.

Section III examines the recent history of broadband taxation as well as consumer welfare impacts of taxation in the context of stakes, stakeholders, impacts and roles of citizens in the broadband revolution. It calls attention to some principles of good taxation and then introduces subsequent discussion of distant, collateral and other indirect economic effects of broadband and related telecom service taxation on consumers and economic welfare.

Sections IV and V focus intently on markets for broadband network services. They specifically address a) the unique role of broadband networks and services in the larger economy; b) their leverage in creating value in distant and collateral markets; and, more generally, c) why broadband services warrant special consideration vis-à-vis other economic sectors and approaches to taxation. Section IV reports methods and quantitative estimates of consumer welfare losses from broadband taxation. It cites evidence that such taxes discriminate against low income, minority, senior and rural citizens.

Section V looks more broadly at the negative impact of broadband taxation on the macroeconomy and on more specific national goals related to energy, the environment, transport and others. It summarizes relevant literature addressing the impact of broadband investment on other sectors of the economy and other metrics economic performance. It considers these impacts in the context of the main question of the paper: “Is broadband tax forbearance a good investment for state governments?” Section VI concludes the paper.

II PERSPECTIVES AND CONTEXT

We take note first of the dilemma being faced by fiscal authorities, particularly those at the state and local level. Most are confronted with growing demands of citizens for more and better public services in health care, education, corrections, employee pensions systems, infrastructure, and others.⁴ They are coming to grips with budget realities created by spending plans based on optimistic projections of receipts based on past growth trends, slower-growing or diminishing current receipts, rising costs of public programs, relocation of jobs and production facilities, rising demand for public services, and claims by major taxpayer groups of entitlement to special tax treatment.

As this was written there was a spirited debate over whether or not the national economy was in a recession or merely a slowdown and temporarily in the doldrums.⁵ Either way, budget deficits and calls for remedial, anti-cyclical government measures have energized debates over taxation in nearly all state and local jurisdictions. In this context rapidly growing, high valued electronic network communications services are an inviting, if not, as suggested below, a logical tax target.⁶ But, a fair and complete assessment of the merits of alternative

⁴ These concerns are reflected in The Fiscal Survey of the States, June 2007, National Governors Association, National Association of State Budget Officers. See also National Council of State Legislatures, Nexus in the New Economy: Ensuring a Level Playing Field for All Commerce, September 13, 2008, (addressing problems created by online sales, but also state fiscal challenges more generally) <http://www.ncsl.org/programs/fiscal/nexusneweconomy.htm>

⁵ The paper was substantively completed at the time of discussions of a \$700 billion federal “bailout” of Wall Street in the wake of the crisis in markets related to home mortgages. Details of conditions in financial markets at the time and of the federal government’s assistance package were beyond the paper’s scope, but did not in any event change its principal perspectives or conclusions.

⁶ Telecom growth rate estimates are quite varied, depending on the source and the definitions used. Notwithstanding the variation the big picture is a clear. Network communications services by whatever platform (wireline, cable, wireless) are expected to grow in the aggregate in the 7-9% per year range for the next few years – a rate that contrasts sharply with the slow, flat or declining growth projected for the general economy. Wireless and broadband Internet services growth are well above the mean, while legacy wireline services and ordinary cable entertainment services trail. Most will nonetheless outpace the general economy and other tax bases in general.

fiscal approaches, and in particular, those that implicate communications networks has to be much broader. The most notable of these forces and circumstances are discussed below.

A. US Broadband Performance

There is a striking consensus on the importance of the development of broadband networks to the US economy. The Chairman of the Federal Communications Commission recently summed up the links as follows:

Broadband technology is a key driver of economic growth. The ability to share increasing amounts of information at greater and greater speeds, increases productivity, facilitates interstate commerce, and helps drive innovation. But perhaps most important, broadband has the potential to affect almost every aspect of our lives – from where we work, to how we educate our children and increasingly to the way healthcare is delivered...Continued broadband deployment and infrastructure investment is vital to this country's economic growth.⁷

The importance of broadband technology and different approaches to encouraging its development has provoked debate over the performance of US *broadband* markets.⁸ Not surprisingly, there is spirited disagreement over how

<http://www.reuters.com/article/technologyNews/idUSN2255854420080222?pageNumber=1&virtualBrandChannel=10003>

⁷ Statement Of Chairman Kevin J. Martin, Re: *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscriberhip Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscriberhip*, WC Docket No. 07-38; Re: *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, GN Docket No. 07-45.

⁸ The term *broadband* is qualified here in respect to the fact that the term is not well defined or bounded in most discussions. Moreover, the definition and its application are changing to reflect the evolution of technology and systems supporting faster/broader throughput. The FCC has been widely criticized for the definitions it has used in reporting to the Congress on deployment of advanced telecommunications services as required by the Communications Act of 1996. In its most recent report, the Commission explained: "In previous reports, the Commission defined 'broadband' – and, in effect, 'advanced telecommunications capability' and 'advanced services' – as services and facilities with an upstream (customer-to-provider) and downstream (provider-to-customer) transmission speed of more than 200 kilobits per second (kbps). As in these previous reports, we use these terms interchangeably for the purposes of this Report, and we describe service speeds with greater specificity where needed. By contrast, the Commission has used the term 'high-speed' to describe services with over 200 kbps capability in at least one direction." GN Docket No. 07-45, *In the Matter of Inquiry Concerning the Deployment of Advanced*

we are doing, what standards should be used for comparison, and what metrics should be used to measure performance in broadband markets. Analysts rely on widely differing frames of reference, measures and methods to derive rankings.

Relying on selected measures of broadband availability, adoption, quality and price, critics assert that the United States is trailing badly and losing ground when compared to other countries. That view is based for the most part on widely circulated and publicized estimates published by the Organization for Economic Cooperation and Development (OECD) which place the US 15th in subscribers per capita among 30 OECD nations.⁹ Based on the OECD methods and data, the US fares only slightly better using a broader composite average of share of households subscribing to broadband, average broadband speed, and broadband prices.¹⁰ Critics allege a series of shortcomings in terms of speed and pricing. They aver that Iceland's broadband subscription rate is more than 50 percent above the US; that the US pays about nine times more per megabit of throughput than South Koreans; and, that average speeds in Japan are 20 times faster than in the US.¹¹

Other analysts take issue with the results of the OECD studies and others on which these claims are based. Using other metrics and methods, they offer sharply contrasting results that cast US performance in a more favorable light. A recent study concluded:

...[T]he OECD estimates are inaccurate and therefore misleading. In fact, broadband is nearly universally available in the U.S. and the U.S. compares favorably to other rich countries in terms of broadband penetration, speeds, and in broader measures of information and communications technology.¹²

Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, FIFTH REPORT, Adopted: March 19, 2008 Released: June 12, 2008, p. 2. Available online: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-88A1.doc

⁹ Robert D. Atkinson, "The Case for a National Broadband Policy," The Information Technology and Innovation Foundation, June 2007, p. 1.

¹⁰ Id.

¹¹ Id. We emphasize that these assertions are fiercely contested, but persist as part of critics' perceptions and claims about our global rank.

¹² Scott Wallsten, *Understanding International Broadband Comparisons*, Technology Policy Institute, May, 2008. http://techpolicyinstitute.org/files/wallsten_international_broadband_comparisons.pdf

The author elaborated on the basis for this more upbeat assessment: "Discussions about broadband policy in the United States today inevitably begin by citing OECD estimates. Many analysts interpret the low ranking of the U.S. in broadband penetration relative to other OECD countries as meaning that U.S. broadband policy has been a failure." This passage implicitly calls attention to the principal impetus for the debate over the U.S. ranking, namely disagreement over

The analysis needed to reconcile the methodological and statistical differences underlying these contrasting assessments is beyond the scope of this paper. As a practical matter the dispute is irreconcilable to the extent that it is driven by political and policy differences rather than disinterested data analysis. Most of the concern expressed over global rankings of US broadband performance is offered in the context of critiques of US policies and, more particularly, by regulation or the lack thereof by the Federal Communications Commission. The debate is fueled by policy differences between those who favor more government intervention in broadband markets and those who caution against the unintended, unanticipated consequences of more activist regulation of broadband network service providers.¹³

Fortunately for our purposes, the static rankings do not really matter, since advocates on all sides share the goal of making broadband networks faster, cheaper, with more subscribers and more widely available. They agree that we can and should do better. The dispute over rankings is important mainly in the context of spillovers into discussion about the best way to accelerate broadband development. And in that context, as discussed below, telecom tax policies come very much into play.

B. Broadband Investment Is Risky

Investment in broadband networks requires substantial capital outlays. Broadband networks are very capital intensive as reflected in high investment

the role of regulation and markets in promoting high rates of broadband development. Those favoring a relatively modest role for government are more optimistic about our rank than those who have found markets inadequate and favor a more activist role for government in promoting broadband.

¹³ “The U.S. broadband policy debate is characterized on the one hand by market fundamentalists who see little or no role for government, and see government as the problem; and on the other by digital populists who favor a vastly expanded role for government (including government ownership of networks and strict mandatory unbundling of incumbent networks and strict net neutrality regulations) and who see big corporations providing broadband as a problem.” Robert D. Atkinson, Daniel K. Correa, and Julie Hedlund, *Explaining International Broadband Leadership*, The Information & Innovation Foundation, May 2008, p. 3. Accessed July 16, 2008 at: <http://www.itif.org/files/2008BBExecutiveSummary.pdf>. See also, Correa, Daniel K. 2007, “Assessing Broadband in America: OECD and ITIF Rankings.” The Information Technology and Innovation Foundation: Washington, DC. April, 2007. Accessed online July 16, 2008 at: <http://www.itif.org/files/BroadbandRankings.pdf>. The issue has found its way into campaigns for President of the US as well. See, TR Daily, “McCain, Obama Advisors Discuss Candidates’ Tech Policy Stances”, July 15, 2008. (No page number in electronic version)

costs per home passed or per subscriber. Precise costs are contingent on the type of network to be built, the functionality of the existing infrastructure, population density, distance from major metro centers, and others.¹⁴ Capital costs are compounded by uncertain returns associated with the investment and consequent risk premia assigned to debt and equity securities backing the investments. This is in sharp contrast to days of yore, when telecommunications network investments were made in a noncompetitive environment for provision of quasi-monopoly services protected from competition.¹⁵

Table 1: Financial Performance Indicators for Selected “Web-Centric” Companies

	Profit Margin (%)	Sales Growth (%)	Return on Invested Capital	Return on Equity	Return on Assets	Price to Earnings (P/E) Ratio
Google	24.9 %	42.5 %	20.5 %	21.1 %	18.9 %	41X
Yahoo!	6.9	8.7	4.5	12.5	3.9	34X
eBay	5.3	24.0	3.6	3.8	3.0	100X
Amazon	3.2	37.1	24.6	55.7	10.7	63X
Comcast	7.7	13.5	2.4	6.0	2.2	27X
Time Warner	7.8	2.1	3.1	6.1	2.1	16X
AT&T	10.4	6.1	5.4	11.1	4.6	19X
Verizon	6.0	6.1	4.4	11.4	3.0	19X

Source: Data retrieved on May 13, 2008 from: <http://moneycentral.msn.com/investor/common/>

Unlike traditional monopoly utility companies, profits and cost recovery for broadband are by no means assured. Telephone companies and cable companies that provide the bulk of the investment capital for broadband networks are not capable of generating supernormal returns. Indeed, Table 1 above suggests that, if current financial performance metrics reflect expected returns on incremental investment, then broadband returns are likely to be modest. While returns on “broadband investment” per se and on a standalone basis are not available, they are for a variety of reasons likely to be below the returns on invested capital, equity and assets reported above for Comcast, Time Warner,

¹⁴ A good tutorial on these costs, their main drivers and determinants of investment returns is reflected in Patrick Garvey, *Cost and Profitability Drivers for Fiber to the Home, Last Mile*, and July 2005, available online at: <http://www.corning.com/docs/opticalfiber/r6324.pdf>.

¹⁵ This quasi monopoly environment, incidentally, was the context for continuing practice of singling out communications networks for special (higher) taxation. This is discussed more fully in Section III below.

AT&T, and Verizon.¹⁶ Returns for selected applications and content provided by firms, like Google and Amazon, that use broadband infrastructures are on average well above those for providers of that infrastructure. The longstanding monopoly power, or excess profits, rationale for taxing electronic information infrastructures no longer applies. And, indeed, taxation merely compounds market risk, reduces investment incentives and diminishes the value of the network to other firms and consumers in the value chain.

These are more than theoretical concerns. Risk and related profit incentives for investing in broadband networks were made quite clear in the testimony of Wall Street analysts in US Senate Communications Sub-Committee hearings on the role of government in markets for broadband services.

- Wall Street analysts, collectively, told the Committee: “...billions of dollars being spent by AT&T Inc. and Verizon Communications Inc. to compete with cable might not produce a profit.”¹⁷
- Mr. Luke Szymczak, vice president of JP Morgan Asset Management testified: “There is a high degree of skepticism that the substantial investment underway at the [phone companies] to deliver broadband networks to the home will deliver a satisfactory return on the incremental investment.”¹⁸
- Mr. Aryeh Bourkoff, managing director at UBS Warburg LLC, expressed concern about government actions that would impact the ability of the cable industry to earn reasonably on, and recover, more than \$90 billion

¹⁶ The main reason for probable lower incremental returns on broadband investment than for legacy services – voice, cable television, data, etc. – is the fact that broadband services have a lower adoption rate than for legacy services. That means that the burden of initial, sunk investment costs for broadband must be spread over, and borne by, fewer subscribers. Details of the investment cost relationship to density and number of subscribers are developed in, Larry F. Darby, *Consumer Welfare, Capital Formation and Net Neutrality: Paying for Next Generation Broadband Networks*, June 6, 2006, Section III (Released by The American Consumer Institute.) Available online at: <http://www.theamericanconsumer.org/2006/06/06/consumer-welfare-capital-formation-and-net-neutrality-paying-for-next-generation-broadband-networks>.

¹⁷ Ted Hearn, “Analysts Question Bell Investments”, *Multichannel News*, March 14, 2006. Online at: <http://www.multichannel.com/article/CA6316081.html?display=Breaking+News>. For the entire testimony, see the record of the Senate Sub-committee Hearing on Net Neutrality addressing “Wall Street’s Perspective on Telecommunications”, March 14, 2006 at: <http://commerce.senate.gov/hearings/witnesslist.cfm?id=1705>

¹⁸ Id.

on network upgrades to roll out digital TV and high-speed-Internet access.¹⁹

Others, and we, have expressed similar concerns.

- “Our analysis of the economics of the Bell’s fiber optic deployments suggests that earnings dilution can’t be avoided in the near term, as the capital outlays for deploying fiber outpace the more gradual penetration of new services and cost savings.”²⁰
- In an earlier survey of analysts’ views, we concluded: “Financial analysts’ and investors’ views about broadband investment by telephone and cable companies vary from lukewarm to negative. None are enthusiastic about the payoff to shareholders and creditors who express concerns about expected earnings, earnings growth and risk from construction of broadband networks. All are implicated from an investor’s point of view during consideration of the enormous capital outlays involved in building next generation fiber networks. Most analysts appear to be quite cautious and some are downright skeptical to the idea of massive telco or cable company, high-risk capital expenditures.”²¹

An ambitious effort to bring “ultra” broadband to American households is a “fiber-to-the-home” (FTTH) network being constructed by Verizon under the trade name FiOS. The economics of FiOS are ironic and in sharp contrast to frequent suggestion in policy debates that broadband suppliers are exploiting market power borne of limits on the number of competitors or that consumers have no options or are otherwise dissatisfied with broadband offerings. The facts of FiOS belie these general assertions, but raise yellow flags, albeit for very different reasons.

According to Bernstein, a highly regarded Wall Street research firm: “There is little doubt that Verizon’s FIOS is a terrific product...*for consumers*.”²² In sharp contrast to consumer complaints about cable services, FiOS has drawn

¹⁹ Id.

²⁰ Bernstein Research, “The Couch Potato Wars: Assessing the Impact of Bell Entry into the Consumer Multichannel Video Market”, May 2005, Exhibit 58 at p. 82.

²¹ Larry F. Darby and Joseph P. Fuhr Jr, “Consumer Welfare, Capital Formation and Net Neutrality: Paying for Next Generation Broadband Networks” Media Law and Policy, summer 2007, pp.122-64. Available at: <http://www.aci-citizenresearch.org/Net%20Neutrality%20Study.pdf>. (Hereinafter, “American Consumer Institute Net Neutrality Study”.)

²² Craig Moffet, et al, *Verizon (VZ): Project FiOS...Great for Consumers, But What About Investors?*, Bernstein Research, January 14, 2008. (Emphasis added)

rave reviews from consumers and consumer advocates. Consumer Reports recently granted FiOS its first “perfect” score for a video or broadband provider.²³ That is the good news. The not so good news, as suggested by the foregoing quotes from analysts is that the broadband market is competitive; broadband investment is risky; and, returns to investors are uncertain.

And, of course, true to historical precedent and good business practice in constructing telecom networks, markets with the highest expected returns are built out first. Thus, what remains to be done – that is building out broadband networks to reach rural and other markets showing higher cost and less expected revenue – is even less financially attractive to investors who supply scarce, risk capital.

No investment promises certain or high returns. Views on the relative riskiness and uncertainty of investment in networks that provide broadband services are mixed, but nobody suggests that such networks can be taxed without regard to negative market effects of doing so.

Governments can be a part of the solution and help alleviate investors’ concerns about the fundamental business case for broadband investment, or they can be a part of the problem by adding to costs, risk, and uncertainty, thereby discouraging investment and the rate of broadband rollout and penetration.

The basic economics of broadband investment – uncertainty, high risk, high cost, and modest expected returns – are quite relevant in determination of optimal tax policies toward providers. Tax policy can exacerbate the low returns on capital investment discussed in the prior section. For example, while most states exempt machinery and equipment used in manufacturing, processing, and agricultural production from sales and use taxes, 22 of the 45 states with sales and use taxes impose such taxes on machinery and equipment used to produce broadband and other communications services.²⁴

These taxes add substantially to the already high cost of purchasing and deploying routers, switches, antennae, fiber optic cable, and other equipment necessary to expand or upgrade wireless infrastructure. These taxes on broadband business inputs increase the cost of investment in such equipment, lowering rates of return on such investments as compared to other business sectors like manufacturing where business inputs are exempt. Furthermore, taxation of broadband equipment causes the pyramiding of taxes as taxes on inputs are

²³ Id.

²⁴ Scott Mackey, Testimony before the Texas House Ways and Means Committee In Support of HB 2787, April 4, 2007, p. 2.

incorporated into the price of the service sold to consumers, which is again subject to sales, excise, and other communications taxes.

Some states are trying to impose additional property taxes on broadband investments by using valuation methodologies or eliminating longstanding pro-investment property tax treatment of broadband equipment. Local governments in Massachusetts are attempting, through the legislature and the courts, to impose property taxes on communications equipment even though similar property of financial services companies and manufacturers is exempt.²⁵ In Montana, the Department of Revenue is arguing that wireless infrastructure should be reclassified as “utility” property and subject to higher property tax burdens.²⁶

These and related efforts to impose new property taxes on broadband network investment will only drive up the cost of investment in broadband infrastructure, thereby undercutting the business case for investing in broadband facilities and denying consumers associated benefits.

C. Taxes on Telecommunications Services Are Especially Burdensome

Taxes on telecommunications services are on average substantially higher than for retail sales in general. A recent study estimates that taxes, from all levels of government, on telephone and cable television subscribers exceed 13%. That rate is roughly twice the study’s estimate (6.61%) of the average general sales tax paid on other goods.²⁷ In some cities the rate for cable subscribers exceeds 20%; the rate for telco subscribers often exceeds 25% and reaches more than 30% in some US cities; and, the rate for wireless services is frequently above 15% and has reached more than 20% in one city.²⁸ The average household might save over \$10.00 per month (\$125.76 a year) if taxes and fees on cable television and phone calls reflected the same general sales tax rates imposed on clothing, sporting goods, and household products – some of which are not taxed at all in many states.

Taxes and fees on telephone calls and cable TV are often equal to, or surpass, “sin” taxes on “public nuisance” goods like liquor and tobacco that impose significant costs on society. Tax experts estimate that taxes and fees paid by the average wireline telephone subscriber are higher than the average tax on

²⁵ Private communication to authors from Mr. Scott Mackey, Economist and Partner, Kimbell, Sherman, and Ellis LLP, www.ksefocus.com.

²⁶ Id.

²⁷ David Turek, Paul Bachman, Steven Titch and John Rutledge, “Taxes and Fees on Communication Services”, The Heartland Institute, May 2007, p. 2 and p. 41.

²⁸ Id. p. 2

beer in numerous US cities. In one city (Jacksonville, Florida), taxes and fees on wireline phone service exceed taxes on beer, liquor, and tobacco.²⁹

D. Telecommunications Taxes Are Regressive

Telecom taxes hit poor people harder than wealthier citizens. This is the result of taxes on transactions which are the same irrespective of income. A “poor” telecom or broadband subscriber pays the same amount of tax per dollar spent, but a larger share of disposable income, relative to more well-to-do subscribers. A recent study of telecom taxes concluded:

Taxes and fees on communication services are regressive with respect to income: their rate as a percent of household income declines as household income rises. A family that earned the upper limit of the lowest quintile of households in the country (\$24,780) and paid the average amount in communication taxes and fees (\$249.24) shouldered a tax and fee burden of about 1.0 percent. A household that earned the median average income (\$44,334) and paid the same amount in communications taxes and fees paid only half as much, about 0.56 percent, of its annual income. A household in the top income quintile, earning \$173,640 a year, paid an effective communication tax rate of only 0.14 percent, about one-tenth the rate paid by low-income households.³⁰

Some jurisdictions are levying per line charges that are particularly burdensome on low-income subscribers. For example, in 2005 the City of Baltimore imposed a \$3.50 per line charge on wireless and wireline telephone users. Since many of the newer wireless “family share” plans provide a second or third line for only \$10.00 per month, these new per-line impositions, when added to existing sales taxes and 911 fees, generate a marginal tax rate of 50% on these family share plans. Obviously, these excessive taxes impose a disproportionate tax burden on low- and moderate income families.

E. Case for Broadband Taxation Eroded by Technoeconomic Change

There are several reasons why traditional telecommunications tax principles and practices do not fit current reality. Perhaps the most important one is the current inapplicability of the historic status of telephone and cable systems

²⁹ Id., p. 3.

³⁰ Id., p. 24.

as regulated monopoly utilities. As such, cable and telco companies were regarded as “quasi-public”, “affected with a public interest,” “common carrier-type” businesses. There evolved over the years a “social contract” between these private companies and governments. The “contract” involved extraordinary privileges (protected monopoly) in return for shouldering extraordinary burdens – taxes, government controls, special service obligations and others. However, technology and the response of both markets and government institutions have dramatically altered the foundation for this special status and set of relationships.³¹

In a monopoly environment, the economic distortions from taxing legacy networks and services were much less than those occasioned today in the context of multiple uses of broadband networks for gathering and disseminating diverse forms of information from equally diverse sources. This is especially true in the context of the use of broadband networks in the distribution chain as substitutes for other economic inputs – land, labor and capital. Telecom tax distortions are no longer relatively localized, but rather are cascaded and compounded throughout applications, content, software and other companion internet sectors, as well as being felt in all sectors and economic activities in which broadband network services are important productive inputs.³²

F. Broadband Networks Receive Numerous Subsidies from State and Local Governments

Broadband telecommunications access has increasingly become the focus of developmental efforts and concerns worldwide as the technology has evolved, new applications and content materialized, and cost to users have declined. Indeed, broadband access facilities have come to be regarded universally as infrastructure essential for local, national and global economic development. Leaders in most countries are on record indicating the special nature of broadband, Internet services. They recognize the value of broadband technology in setting national priorities and policies.³³

³¹ In brief, the sector is a) more competitive and offers consumers more choice, b) less regulated, c) more technologically dynamic, d) faster growing and more risky, and e) less reliant on government favors in the creation of economic value. The importance of these changes is acknowledged and indeed emphasized by the NGA. See footnote ?? below.

³² These are discussed more fully below in Section V.

³³ In 2004 President Bush stated: “This country needs a national goal for...the spread of broadband technology. We ought to have...universal, affordable access for broadband technology by the year 2007, and then we ought to make sure as soon as possible thereafter, consumers have got plenty of choices when it comes to [their] broadband carrier.” (http://www.whitehouse.gov/infocus/technology/economic_policy200404/chap4.html). Similar positions have been adopted in Europe, where the European Commission has concluded:

A comprehensive survey of state and Federal broadband “assistance” policy initiatives showed that all states and the District of Columbia have taken measures to promote broadband development. Twenty-two states offer grants to support private sector deployment in underserved areas; seventeen offer grants to help underwrite investment and operations in rural areas; fifteen offer some form of tax incentive to broadband providers; seven offer loans to broadband providers; eight use various “universal service” mechanisms to promote broadband deployment; and four offer “general” grants to broadband providers.³⁴

A recent study of 52 selected municipally owned and operated local multifunctional, broadband networks have absorbed over \$842 million in taxpayer funds over a twenty year period. Over three-quarters of those are still drawing on taxpayers to fund ongoing operations.³⁵ There are various federal programs to stimulate broadband technology. The largest is the Federal Universal Service Fund administered under provisions in the Telecommunications of 1996. That fund collected from interstate service providers and disbursed mainly to high cost providers and to schools and libraries \$7.3 billion in 2006, while disbursing a total of \$ 21.9 billion during the 1998-2006 timeframe. Not all of this was in direct support of broadband, but owing to changing technology and the needs of

"...widespread and affordable broadband access is essential to realize the potential of the Information Society." (http://ec.europa.eu/information_society/eeurope/2005/all_about/broadband/index_en.htm); An Australian government report concluded that "ubiquitous, multi-megabit broadband will underpin Australia's future economic and social prosperity" (http://www.dcita.gov.au/communications_for_consumers/internet/broadband_blueprint/broadband_blueprint_html_version/chapter_one_broadband_as_critical_infrastructure). The Japanese have joined with regional partners to: "...enable all people in Asia to gain access to broadband platforms" by 2010." (see <http://www.dosite.jp/asia-bb/en/pdf/abp005.pdf>). The ITU and World Bank have issued numerous documents in which the value of broadband infrastructure as contributors to development in developing economies. References to numerous ITU studies and data addressing the role of ICT and broadband in economic development in less developed countries, regions and areas are available on the ITU Development Sector (ITU-D) website at: <http://www.itu.int/net/ITU-D/index.aspx>.

³⁴ Scott Wallsten, “Broadband Penetration: An Empirical Analysis of State and Federal Policies. Working Paper 05-12. Jun 2005, p. 19. Available at: <http://www.aei-brookings.org/publications/abstract.php?pid=949>.

³⁵ Sonia Arrison, Dr. Ronald Rizzuto, and Vince Vasquez, “WiFi Waste: The Disaster of Municipal Communications Network,” Pacific Research Institute February 1, 2007, p. 1.

applicants to the USF, a substantial and growing share of it is fairly denominated as “government administered subsidy to broadband.”³⁶

While simultaneously subsidizing and taxing particular kinds of economic activity is not without precedent, the extent and depth of the practice in the context of telecom networks raises questions of purpose and consistency. It is of course possible to make a case for doing so, but to date no such case has been forthcoming.

G. A National Network Requires a National Telecom Tax Framework

In the economic policy literature “externalities” refer to costs or benefits arising from individual or group actions that are borne by other individuals or groups. Cigarette smoke generates both private and public costs, while acts of environmental preservation generate both private and public benefits. Many economic activities generate both internal and external costs and benefits.

So it is with taxes imposed on telecom networks by state or local fiscal authorities. The benefits tend to be local, while the costs are nationalized.

Externalities, or “spillover” effects, are important since they are consequences, but not generally motivators, of economic action. Decisions made on the basis of perceptions only of private costs and benefits often result in socially uneconomic decisions. Both public and private decisions tend to be made with a view toward associated costs and benefits borne by the decisionmaker. But if these individual or group costs or benefits diverge from aggregate public costs or benefits, the overall, aggregate optimum will diverge from that of the individual or group on whose behalf the decision is made.

Externalities are important in many economic contexts, but especially so in the context of networks linking many individuals. For example, network externalities are generated by a new subscriber to a telephone network, since the action not only creates value for the subscriber, who can now contact others, but for others as well, inasmuch as they are now able to contact the new subscriber. By the same token, the new subscriber may create costs for others if his/her calling patterns create network congestion that is borne by others in the form of costs of increased waiting times or lower service quality.³⁷

³⁶ A general description and details of the Universal Service Fund administered by the Universal Service Administrative Company (USAC) is available at: <http://www.usac.org/about/universal-service/fund-facts/fund-facts.aspx>.

³⁷ The optimal policy response to this issue is currently being debated in the context of the impacts of extraordinarily heavy users of Internet bandwidth on network availability to the

Broadband networks generate at least two distinguishable kinds of externalities. These are: (a) values generated by individuals for other individuals in the same group and (b) values generated by members of a group for members of one or more other groups. The first is reflected by expanding the number of users connected to a network. The increased value is disproportional to the change in number connected and can be thought of as economies of scale in demand. The classic statement of this effect is known as “Metcalfe’s Law” (after the inventor of the Ethernet) which holds the value of networks increases according to the square of the number of members. This formulation reflects the fact that the incremental user (say the 1,000,001st) creates value for her and for the other million subscribers who now benefit from her presence.³⁸ While most analysts believe this relation to be an exaggeration, in the sense that not all subscribers have equal value to other subscribers, they generally concede the main point that there are positive and significant externalities from increased subscription to different kinds of electronic networks.

The second type of externality, those created by the group on the network for other groups or in other sectors (intergroup or intersectoral spillovers), has proved in the case of telecommunications networks to be even more substantial. These externalities are both static and dynamic in nature. In a static sense, the existence of broadband information distribution networks contemporaneously creates value in other economic sectors and activities by increasing sales, employment, output, growth, efficiency and improved economic performance in other dimensions, including important ones in the environmental, energy, public administration and healthcare sectors.³⁹ In a dynamic sense the existence of broadband information distribution networks stimulate or enable innovations in production methods or new/better goods and services. While the former static externalities are realized now, the latter will materialize and create value downstream.

average user. Heavy usage by so-called bandwidth “hogs” imposes congestion on the network, the costs of which must be borne by other users. See, Larry F. Darby, *Free or Easy Riders Tax Ordinary Internet Subscribers*, ConsumerGram of the American Consumer Institute, April 30, 2008 and Larry F. Darby, *Network Management Facts and the Tragedy of the Commons*, March 26, 2008, available at: <http://www.theamericanconsumer.org/2008/04/30/free-or-easy-riders-tax-ordinary-internet-users/>.

³⁸ For a thorough and very engaging discussion of these effects in different network industries, see Jeffrey H. Rohlfs, *Bandwagon Effects in High Technology Industries*, The MIT Press, Cambridge Mass., 2001.

³⁹ These effects are discussed more fully and documented in Section V below.

It is notable that many of these intersectoral externalities are geographically and geopolitically dispersed. Economic activities in one location or political jurisdiction have impacts, positive or negative, in others. Thus, for example, working at home via broadband connections lowers transport costs and congestion, reduces environmental pollution, and lowers real estate costs and other benefits in areas not necessarily congruent with the location of the connections that enable them. Benefits are also not necessarily geopolitically coincident. Thus, in the case of electronic retailing for example, online retail firms enabled by network connections in all parts of the country concentrate those benefits in one or a cluster of locations. Thus, networks allow firms to access buyers without being closely adjacent geographically to them. This permits buyers in smaller, more remote areas to gain access to large national distributors, without the congestion and other inconveniences of nearby locations.

Just as benefits of geographically bounded and defined networks are shared more broadly, so to are the costs and distortions occasioned by taxing such networks. It is indisputable to conclude that the burden of taxes imposed by state and local authorities on output or inputs of national or regional networks will be shifted and shared by citizens and businesses in other communities. A clear implication is that there ought to be a national framework for establishing telecom tax structures as a means of for avoiding national distortions from excessive and inconsistent state and local taxation.⁴⁰

III BROADBAND TAXATION

A. Taxes and Access to Broadband Communications

⁴⁰ The National Governors' Association (NGA) has made clear its awareness of the highly leveraged role of modern telecom infrastructure in raising economic welfare of citizens. NGA policy statements also recognize the unprecedented technoeconomic change in telecommunications and its implications for States' efforts to encourage investment, maintain technological neutrality, and advance the broad public interest. "A modern communications infrastructure that provides high-quality, reliable, and affordable communications services is essential to the economic competitiveness of states and the nation. Recent technological advancements in communications services are fundamentally changing the manner and means by which consumers communicate with one another. These changes have led to the development of new services, greater competition, and increased consumer choice. [They] pose challenges for states, which generally tax communications services based on the technology used to provide the service rather than the service itself...Governors support continuing those discussions with the goal of developing mutually agreed upon national guidelines...that encourage investment, innovation, and competition; preserve state authority; provide necessary resources; and advance the public interest." "National Governors' Association "Policy Position". Available at: <http://www.nga.org/portal/site/nga/menuitem.8358ec82f5b198d18a278110501010a0/?vgnnextoid=7de82ad998254010VgnVCM1000001a01010aRCRD>

Broadband communications means different things in different contexts. The definition itself is subject to considerable controversy. We will finesse that here by using, without endorsing, the FCC definition of broadband service used in its reports to Congress on the state of markets for advanced telecommunications services – namely a service which is at least 200 kbps in each direction. That definition embraces Internet access via cable modems and wireline telephones (via DSL), which may be many times faster. Others suggest a standard of 1.5 mbps or higher, while access providers over telco and cable facilities have offerings that exceed even that rate. It is commonplace and convenient to interchange the terms internet access and broadband access, even though they may differ, inasmuch as (a) the Internet may be accessed by narrowband dial-up connections and (b) not all broadband connections are for internet access.

In 1998 President Clinton signed into law *The Internet Tax Freedom Act*. Its purpose was to promote the availability of Internet access services by preventing state and local jurisdictions from imposing taxes on services providing narrowband and broadband access to the Internet. The focus of the moratorium was the Internet. The moratorium was extended in 2007 and has been as it is now intended to relieve the sector from potential administrative and economic burdens, which Congress expected would discourage investment and competition.⁴¹ Congress believed that such taxes would raise rates to consumers and deprive them of valuable communications options that would otherwise be available; that Internet taxes would reduce broadband development; and would, accordingly, reduce the economic and political contribution of the Internet to other sectors and stakeholders.

The results of the Moratorium are now being realized. There are clear and reliable indications that the Moratorium is working in two senses. With some exceptions,⁴² taxes have been suppressed and, with no documented exceptions, economic welfare of users has been enhanced. Tax-based barriers to investment have been eased enormously and the rest of the economy is benefiting handsomely by the economic activity stimulated and made more efficient by the expansion of tax-shielded networks and services.

⁴¹ For a good sense of the context of the extension and a discussion of its broad support see, Jim Puzanghera, Congress approves Internet-tax moratorium , October 31, 2007, online at <http://articles.latimes.com/2007/oct/31/business/fi-nettax31>

⁴² There are recurring questions about both the definitions and intent of Congress. These have resulted in continuing controversy over the precise application of the Moratorium, in particular which taxes are foreclosed and which are not. Notwithstanding, the law is having the intended effect of blocking tax increases on “internet access services”. But, tax increases on other services provided by networks offering internet access services are not affected and, as discussed above in the introduction, such taxes fall on common user networks and can hinder the development of broadband, internet investment.

B. Stakeholders and Stakes: Consumer Welfare and Citizen Benefits.

Tax impacts in general are known to be widespread, deep and diversified in their economic effects. Voters experience the impact of taxes via the direct and indirect benefits from government programs and spending they support. They are also increasingly and acutely aware of the direct and indirect costs taxes impose on citizens as consumers and stakeholders in the economy.

Direct Impact on Consumers. The first and most direct impact of taxation is on cash available and real incomes of taxpayers as consumers. Taxes on the sale of goods and services almost invariably increase prices for the taxed item and by operation of well known laws of demand reduce the quantity of such services consumers are willing and able to buy. Further, by reducing the value of consumers' real incomes, the tax decreases their ability to purchase all other goods and services.

Investment Impacts and Employment Opportunities In and Outside the Communications Sector. Tax-stimulated price increases reduce demand for and output of private sector services. They do so directly in the taxed sector and indirectly in other sectors. Lessened effective demand leads to less capital spending on infrastructure and fewer job opportunities availed by firms who provide network infrastructure and by firms who produce inputs for and utilize outputs of broadband firms whose services are subject to tax.⁴³

Impacts on Citizens as Corporate Stakeholders. Citizens and taxpayers are financial stakeholders – creditors and shareowners -- in firms paying taxes on services rendered. While citizens are concerned about jobs and prices, they are increasingly concerned about the value of their holdings of long term savings, education, and retirement accounts. The effect of taxes on citizens through reduction in the value of their savings and increased need to save more (consume less) is too important to ignore, as it frequently is by policy makers.

Impacts on Economic Opportunity and Macroeconomic Performance. Broadband networks are a critical input into production and consumption processes in the rest of the economy. Hybrid appellations like “e-Commerce”,

⁴³ The tax on network services will reduce spillover and reduce the value of services provided by other firms in the broadband “value cluster”. Thus, insofar as the business models of companies like E-Bay, Google, Amazon and other providers of applications and content rely on the quality, functionality and reach of network infrastructures, taxes on network services will reduce the value and incentive of these firms to invest. Google's business model, for example, generates revenues in accordance with the number of network subscribers and their search usage rates. Thus, a tax on network services diminishes the value of the network to Google and its users – advertisers in particular.

“Tele-education”, “e-government”, “Tele-medicine”, “Tele-commuting” and others suggest the types and range of productive activities embodying broadband services and networks. That said, applications of broadband to other unnamed sectors are ubiquitous and too common and complex to warrant a specific name.

A recent study by the Information and Technology Foundation undertook to review the vast emerging literature and to catalog the range, depth and character of economic benefits of broadband and more generally of the “Information Technology Revolution”. The Foundation’s analysts found solid empirical evidence that IT drives productivity growth in firms, industries, regions and economies; that productivity growth from IT takes numerous and surprising forms, including more productive workers, less material use, more efficient use of capital and other scarce resources, among other benefits. They emphasized that IT boosts growth both directly and indirectly on both the demand side (larger markets) and supply side (better production technique and management decision-making.) They documented studies and findings establishing that IT helps the economy run at closer to full capacity and avoids waste of underemployment; that IT dampens the business cycle and raises employment, while also enabling goods and services to be allocated more efficiently and thereby to create greater consumer welfare. An important aspect of IT is its contribution to higher quality, more diverse and less expensive services, enabled by quality monitoring, mass customization, specialization and other features.⁴⁴

Impacts on Particular Groups: Special Stakeholders. A growing body of studies and researchers are focusing on the impact of the technology on particular demographic groups. While the technology avails many “across-the-board” benefits, it is sufficiently flexible to permit adaptations addressing the specific needs of groups, communities and individuals. The data show conclusively that the benefits of broadband are different for different groups. Studies document unique and substantial benefits to seniors, handicapped Americans, minorities, rural residents, workers and others.⁴⁵

C. Contributions of Wireless Platforms and Services

⁴⁴ Robert D. Atkinson and Andrew S. McKay, Digital Prosperity: Understanding the Economic Benefits of the Technology Revolution, The Information & Innovation Foundation, March, 2007. Available at: http://www.itif.org/files/digital_prosperity.pdf

⁴⁵ The literature is quite expansive and beyond our scope and purpose to summarize it. The interested, or skeptical, reader is referred to surveys done by The Internet Innovation Alliance and by the Information Technology and Innovation Foundation. Numerous data points are cited there and references provided. See also, William H. Lehr, Carlos A. Osorio, Sharon E. Gillett and Marvin A. Sirbu, “Measuring Broadband’s Economic Impact,” U.S. Department of Commerce, Economic Development Administration (Feb. 2005). Available at: <www.eda.gov/ImageCache/EDAPublic/documents/pdfdocs2006/mitcmubbimpactreport_2epdf/v1/>

Most analyses of the contribution of broadband networks and technologies have to date understandably focused on wireline platforms. That is changing. Spectrum efficiencies, new technologies and applications have combined to provide substantial improvements in data speeds and functionality for wireless platforms. Wireless broadband penetration among enterprise users is less than a third the rate for wireless voice services used by business, broadband growth in enterprises will grow dramatically in the next decade.⁴⁶

Thus, while wireless voice services alone contribute to productivity gains by enabling faster, better informed business decisions; eliminating unproductive travel time and energy consumption; more efficient decision-making; enabling varied logistical efficiencies; and, others, these contributions will be multiplied manifold in a growing broadband wireless environment.

Ovum reviewed job classification data from the U.S. Department of Commerce's Bureau of Labor Statistics (BLS) and from 821 job types described there; Ovum identified 360 that would benefit directly and significantly from the use of mobile wireless voice and broadband technologies. It then identified six specific business settings in which deployment and use of wireless broadband is now providing and will provide in the future significant economic benefits. These include: resource and inventory management and documentation; increased efficiency in the provision of health care; automation of field services; reduction of inventory losses and associated expenses; increased efficiency and productivity via sales force automation; and others.

Improvement in health care production and delivery systems is particularly noteworthy. Based on several sectoral case studies, Ovum estimated national productivity gains and savings for the US economy that are truly staggering: "The overall increased efficiencies resulting from the use of wireless broadband applications can be expected to yield savings of over \$528 billion during the 2005-2016 time period."⁴⁷

While all are significant we call attention to expected gains in health care. Health care cost is a matter of rising concern and one of the most labor intensive of all domestic industry and one in which costs associated with information collection, storage, access, and distribution are particularly important. These are also areas in which wireless broadband technologies are robust in providing opportunities to change current practices in ways that create value to patients and

⁴⁶ We rely heavily in this section: Roger Entner, "The Increasingly Important Impact of Wireless Broadband Technology and Services on the U.S. Economy: A Follow up to the 2005 Ovum Report on the Impact of the US Wireless Telecom Industry on the US Economy", 2008 at: http://files.ctia.org/pdf/Final_OvumEconomicImpact_Report_5_21_08.pdf

⁴⁷ Ovum, page 4 and Figure 1.

institutions alike. Ovum estimated savings across the entire U.S. health care industry in 2005 alone of nearly \$7.0 billion attributable to wireless related productivity enhancements.⁴⁸

D. Principles of Taxation: Good Practices.

History suggests a variety of characteristics shared by most “good” tax schemes and programs. The best practices and principles may be classified in various ways, but most include concern in this report for efficiency, equity and overall impact on economic welfare.

The most important characteristic of a tax or system of taxes, in terms of economic impact on individuals and the community is by far its overall efficiency. Tax efficiency means different things, depending on context, but its essence reflects (a) the extent to which a tax encourages or discourages productive activities, (b) the extent to which the tax is a burden on economic activities or citizen welfare, and (c) the extent to which the tax favors or disfavors allocation of jobs, savings, capital, materials and other resources to their most effective use. The antithesis of an efficient tax is one that causes unwanted, costly, or destructive burdens on citizens and distorts economic activity to their detriment.

Taxes ought to be fair and regarded as such by citizens. Common notions of equity imply that taxes should reflect ability to pay and in fact be reasonably progressive with respect to the income of taxpayers. Broadband and related telecommunications network services taxes are neither.

E. Impact of Broadband Taxation: Distant and Collateral Burdens.

Ours is primarily a private enterprise-driven economy. Economic activity is propelled mainly by market forces and private sector decisions. Within that context, substantial amounts of economic activity are directed by government or subject to government influence through tax and expenditure policies or through a complex set of laws and regulation. Taxes are purposive, but they impact economic behavior beyond those purposes. Governments may structure taxes to reflect various intentions – some general, like underwriting expenditures, and others more specific, like rewarding or penalizing certain activities, or recovering for costs incurred or value conferred. In any of these events, the actual effects of broadband taxes and related telecommunications network services taxes can and do have significant unintended, unanticipated, and undesired effects.

⁴⁸ Id., p. 6.

It is a well-known axiom of both economics and politics that: “You cannot change just one thing!” and that everything depends on everything else. The axiom applies nowhere more critically than in the context of government evaluation of alternative approaches and decisions respecting the structure of state and local taxation—what to tax, who to tax and how much to tax. It is important to differentiate among (a) tax paying obligations, (b) direct impact of tax, and (c) overall economic tax burden which includes distant and collateral economic effects. It is not unfair, we think, to observe that fiscal authorities, particularly when considering the implications of taxing network services, focus on direct impacts and do not sufficiently consider indirect economic impacts.

E. State Fiscal Challenge – Maximize Citizen Welfare.

Government income is required to support value creation by government. Taxes provide the income, but also come at the cost of foregone value that might have been created in other sectors, but for the taxes. The trick is to balance at the margin, value created by tax financed expenditures and value foregone in activities that will not occur because of the repressive economic effects of the tax.

IV CONSUMER BURDENS FROM BROADBAND TAXES

We noted that citizens play different roles in the economic system and have different kinds of stakes with respect to tax and expenditures. In most instances, they are both burdened by and benefit from a given tax. The nature of the burden/benefit depends on their respective roles as consumers, workers, investors and general stakeholders in the efficiency of other sectors of the economy and of the economy as a whole. The sum of these constitutes the consumer welfare impacts of tax-induced price changes for broadband access.

A. Tax Paying and Tax Burdens.

The burden of a tax cannot be determined merely by considering where or on whom it is initially imposed. The burden is independent of what it is called and labels may be misleading as to actual impact. The true measure of the burden of a tax is the change in people’s economic situations attributable to imposition of the tax. The changes include the sum of effects on everyone’s net-of-tax income after all economic adjustments have run their courses. A true “cost-benefit” assessment of a tax is a complex undertaking.

Tax burdens include not only changes in people’s after-tax incomes in a single year, but also the lifetime consequences of the tax change. It is unfortunate that policymakers are not generally presented with reliable information on the true burden of taxation, or of the benefits from expenditures. They must often make

critical policy judgments based on incomplete, superficial or misleading statistics. Given the dynamics of growth and diversifying economic impact of broadband network services, it is especially important, and equally difficult, for policymakers to assess the full impact of decisions to tax, or not to tax.

The burden of a tax, in contrast to its payment and collection, is best estimated by considering market changes in supply and demand triggered by the tax. Taxes affect taxpayer behavior, triggering economic changes that regularly shift some or most of economic burden of a tax to other parties, to other activities and to other sectors. Taxes alter total output and citizen incomes. Taxes reduce and distort the mix of what people are willing to produce in their roles as workers, savers, and investors. Taxes increase what these producers charge for their services or products. Changes in the prices and quantities of output in turn affect people in their roles as consumers when they try to spend their incomes. The lost output and other consequences of taxation impose additional costs on the taxpayers that are not reflected in the mere dollar amounts of tax collections.⁴⁹

B. Tax Impacts on Consumer Welfare.

Taxes on broadband services reduce consumer welfare. They raise prices paid by consumers and reduce after tax revenue received by producers. Both have short and long term negative impacts.

Consumers are worse off for having to pay more and consume less of the taxed service. The conventional measure of the loss in consumer welfare is based on a the concept of “consumer surplus”, which is the difference between what consumers would be willing to pay for the service, rather than to do without it, and what they are actually required to pay. The difference between consumers’ willingness to pay and market price measures this surplus value for consumers and is a good approximation of direct consumer welfare. Price increases destroy consumer surplus. The amount of lost consumer surplus is an approximate measure of the loss of consumer welfare of a tax.⁵⁰

Analysts of the costs and benefits of government actions have over several decades refined methods for estimating consumer welfare losses of different forms of taxes and tax bases. The core of tax burden analysis shows that the burden depends on the tax rate; the original amount of revenue that would have been generated by the service but for the tax; the change in price caused by the

⁴⁹ Stephen J. Entin, “Tax Incidence, Tax Burden, and Tax Shifting: Who Really Pays the Tax?” CDA04-12, November 5, 2004, page 1.

⁵⁰ The standard economic approach is discussed in Joseph E. Stiglitz, *Economics of the Public Sector*, W. W. Norton and Co., 1988 2nd Ed., chapter 17, (Who Really Pays the Tax: Tax Incidence), pp. 411-433.

tax; and the change in quantity purchased occasioned by the tax and price increase. Such analyses have been done for a variety of government actions – taxes, regulatory requirements, subsidies, and others – directed at particular segments or submarkets of telecommunications, ranging from wireline telephony, wireless telephony, and broadband/Internet services. Representative results include:

- The *direct* reduction of economic welfare from taxes on wireless telecommunications exceeds 50% of the proceeds of the tax.⁵¹
- “...the layer of federal, state and local taxes on long distance and wireless telephony could impose a burden of as much as \$7 billion nationwide,⁵²
- By bringing state wireless tax rates down to the prevailing rates for general business taxes, the United States would, in current dollars, increase the nation’s gross domestic product (GDP) by between \$53.6 billion and \$65.6 billion over ten years.⁵³

These and similar studies indicate the order of magnitude of the direct burden on consumers of legacy, narrowband telecommunications taxes, but they tend to underestimate the impact of broadband taxes. The main reasons? They are based on other services, the demand for which is less responsive to price changes than that of broadband services. The demand for broadband is very price elastic, a fact that dictates that small price changes will bring about very large changes in quantity.⁵⁴ Also, long run price elasticities of demand are greater than short run price elasticities of demand. Secondly, as we state repeatedly, the

⁵¹ Jerry Hausman, “Efficiency Effects on the U.S. Economy from Wireless Taxation, NBER Working Paper No. 7281, issued in August 1999. “...federal, state, and local government taxes on wireless services are a drain on the economy that exceeds their direct costs. “The taxes identified in this paper cost the economy \$2.56 billion more than the \$4.79 billion they raise in tax revenues. These taxes are raised from wireless consumers and thereby suppress demand for service, imposing an efficiency loss on the economy of \$0.53 for every \$1 currently raised in taxes. Prospective taxes will impose an efficiency loss of \$0.72-\$1.14 per additional dollar of tax revenue raised.” Available at: <http://papers.nber.org/papers/w7281>. See also, Scott Mackey, “The Excess State and Local Tax Burden on Wireless Telecommunications Service”, State Tax Notes, Vol. 33, No. 3, July 19, 2004, and copious reference notes and citations to other studies.

⁵² Joseph Cordes, Charlene Kalenkoski and Harry Watson, “The Tangled Web of Taxing Talk”; Progress on Point: Periodic Commentaries on the Policy Debate, The Progress and Freedom Foundation, September 2000.

⁵³ J. Gregory Sidak, “Is State Taxation of the Wireless Industry Counterproductive?”, April 2, 2003, available at: http://www.criterioneconomics.com/docs/sidak_pacific_research.pdf

⁵⁴ Demand for wireline local service has an elasticity of about .5, while that for broadband is likely six times as high and ranging around 3.0. (See American Consumer Institute Net Neutrality Study for a recent review of elasticity estimates, pp. 34-36.)

broadband, Internet services sector is more highly leveraged than specific wireless or wireline telecommunications services in its ability to generate future and collateral increases in economic welfare in other sectors and in other activities.

Closely related studies designed for similar purposes, but focused on broadband services specifically, re-enforce and expand on these results. Studies estimating the consumer welfare impact of rate reductions for broadband subscribers (brought about by changes in Federal, non-tax regulations) indicate:

- A ten percent change in broadband rates – the equivalent of a 10% tax levied or not -- will occasion changes in the present value of consumer welfare of \$24 billion to \$32 billion over a decade. This amounts to over \$285 per household and falls heavily on lower income families, rural households, minorities and senior citizens.⁵⁵
- Others using similar data and the same framework as the foregoing have estimated substantially higher consumer welfare costs. Thus, a subsequent study estimated that consumer welfare loss would be in the range of \$3.4 to \$7.4 billion per year.⁵⁶
- A tax of \$2.00 on broadband subscription rates in the top 69 markets in the United States would lead to consumer welfare losses of \$955 million per year. The “dead-weight” loss is more than five times the tax revenue generated. The total tax burden on producers and consumers is \$136 million, of which around 70 percent would be borne by consumers and the remainder reflected in reduced funds available to producers for investment.⁵⁷

Again, the loss is the difference between consumer welfare “with” and “without” the price changing distortion of government intervention in the market. The analysis of a tax change would show similar direct impacts.

C. Telecom Taxes Are Discriminatory

The rate of taxation on income can be scaled to and made progressively larger on higher incomes. In sharp contrast, taxes on transactions or services are

⁵⁵ Ibid, p. 38.

⁵⁶ J. Gregory Sidak, “A Consumer-Welfare Approach to Network Neutrality Regulation of the Internet”, 2 *Journal of Competition Law & Economics*, 2006.

⁵⁷ Austan Goolsbee, “The Value of Broadband and the Deadweight Loss of Taxing New Technology”, *Contributions to Economic Analysis and Policy*, vol. 5, no.1, 2006. Available at: <http://www.bepress.com/bejeap/contributions/vol5/iss1/art8>

blind to buyers' income. One tax fits all income categories and all demographic segments of the population. The general result is a regressive tax burden that penalizes those with lower incomes and least able to pay. A ten percent tax on broadband is the same for a top income household as for a low income household and, thus, absorbs a substantially greater share of the latter's disposable income. To illustrate, households earning \$5,000 to \$10,000 annually account for only 1.8% of total income in the US, but they pay 6% of total telecommunications taxes.⁵⁸

Lower income, less educated and minorities have lower ability and/or willingness to pay for broadband and for that reason are especially vulnerable to broadband taxes. The point is best illustrated by reference to a recent Pew survey of trends in broadband penetration. In 2007, 47% of households had broadband connections. This average contrasts with rates of only 30% of those with incomes below \$30,000; 40% of black families; 40% of those between ages 50-64; 15% of those over 65; and 31% of households in rural areas. While the penetration rate of broadband in these groups is growing, taxing those services would slow growth and reduce closure of the "digital divide."⁵⁹

V

EXPERT ASSESSMENTS OF BROADBAND TAXATION IMPACTS⁶⁰

⁵⁸ James Prieger, Terri Sexton and Annette Nellen, "The Taxation of Telecommunications in California in the Information Age", California Policy Research Center, 2003, p. 71.

⁵⁹ Pew Internet and American Life Project, Data Memo, John B. Horrigan, Aaron Smith, [Home Broadband Adoption 2007](#), June 2007, p. 4.

⁶⁰ The literature identifying and estimating and otherwise characterizing the benefits of broadband and, by direct implication the costs of taxing it, is too extensive and complex to cite, even summarily, here. For a good sense of its breadth see, Robert D. Atkinson, "The Case for a National Broadband Policy," Information Technology and Innovation Foundation, June 2007; The Broadband Fact Book of the Internet Innovation Alliance. Dale W. Jorgenson, "Information Technology and the U.S. Economy," Presidential Address to the American Economic Association, New Orleans, January 6, 2001, p. 27.; Kevin J. Stiroh, "Investing in Information Technology: Productivity Payoffs for U.S. Industries," *Current Issues in Economics and Finance*, Federal Reserve Bank of New York, 7:6, June 2001.; Stephen D. Oliner and Daniel E. Sichel, "The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?" *Journal of Economic Perspectives*, 14:4, Fall 2000, pp. 3-22.; Robert W. Crandall and Charles L. Jackson, "The \$500 Billion Opportunity: The Potential Economic Benefit of Widespread Diffusion of Broadband Internet Access," Criterion Economics, L.L.C., July 2001. Stephen Pociask, "Building a Nationwide Broadband Network: Speeding Job Growth," TeleNomic Research, Herndon, VA, February 25, 2002; Robert W. Crandall, Charles L. Jackson and Hal J. Singer, "The Effect of Ubiquitous Broadband Adoption on Investment, Jobs and the U.S. Economy", Criterion Economics for the New Millennium Research Council, September 2003. Michael Mandel, "The New Business Cycle," *Business Week*, March 31, 1997; "The New Economy," The Keystone Spirit: Putting Technology to Work" at sites.state.pa.us/PA_Exec/DCED/tech2_1/bneweconomy.htm. Thomas W. Hazlett, Coleman Bazelon, John Rutledge and Deborah Allen Hewitt, "Sending the

The impact of taxes on information and communications technology (ICT) networks and services has been studied by dozens of scholars and policy analysts inside and outside government. The number of published reports runs into the hundreds and comprises a very substantial body of policy-relevant information. Scholarship on the issue is too broad, complex, and detailed to permit more than a brief summary here. Fortunately, despite varied quantitative estimates, there is no disagreement on the presence of substantial positive impacts of tax forbearance.

A. Technoeconomic Change and Data Lags

The body of economic impact literature tracks, but lags, the evolution of technology as the Information Economy has evolved from stand-alone computers, to business-networked computers, to the early narrowband Internet to evolving broadband networks – and revolutionary applications – now in place or being constructed. The focus of studies varies accordingly to address the impacts in stages of the evolution of broadband networks and various subsets of the information and technology sector. Some focus on technology platform (wire or wireless), industry sector (telephone, cable, satellite); others on type of network or location in the value chain (equipment, software, etc.); and still others on various aggregations of two or more of these.

Early studies examined the economic impact of standalone computers. Research subsequently evolved with technology and began with examination of locally networked computers, progressed to embrace the effects of more broadly networked computers with higher linespeeds and then to those with richer complementary content and applications with which to work. Since the economic effects of these investments and their incorporation into consumer, business, government and market processes are not instantaneously realized; studies of impact must necessarily lag innovation and await the full realization of effects. This interplay between technological and economic change on the one hand and the measurement of impacts on the other, accounts for the progression of studies and the limitation today of the number of distinctly broadband studies.

While most communications sector analysts concur that the ability to deliver broadband communications is a critical

Right Signals: Promoting Competition through Telecommunications Reform,” A Report to the U.S. Chamber of Commerce, Washington, DC, September 22, 2004. For two more examples, see “The Economic and Social Benefits of Broadband Deployment,” Telecommunications Industry Association, Arlington, VA, October 2003; and Wayne T. Brough, “State Economies Can Benefit from Broadband Deployment,” Issue Analysis, Citizens for a Sound Economy, Washington, DC, December 1, 2003.

feature of the modern global communications infrastructure, there is limited recent empirical research on the economic effects of broadband...much of the available research... [addresses the] benefits of the Internet generally or more broadly of the “digital economy” rather than to the broadband telecommunications infrastructure per se.⁶¹

It is not a simple matter to set out clearly and summarily the network “drivers” of economic change examined in the broadband-economic impact literature. The same goes for summarizing economic impacts of these value drivers.⁶² The relationships among taxes, investment, consumer welfare, and macroeconomic performance have been studied by several scholars using different models and approaches. Some are intuitive and conceptual, while a mounting number of others are empirical and quantitative. There are several links in the chain connecting taxation, investment and consumer welfare in the taxed sector, and the impact of those taxes and direct investment impacts on the remainder of the economy (multiplier effects).

B. The Chain Linking Broadband Taxes and Economic Welfare

It is instructive to identify the unique role of each link in the chain of causes and effects connecting broadband tax policy and overall economic welfare.

- *Link One.* Broadband suppliers will experience cost reductions and increases in funds available for investment. Investors will be more willing to provide risk capital for expansion and deepening of broadband networks.
- *Link Two.* Tax enabled reductions in broadband supplier costs will be in

⁶¹ Robert Crandall, William Lehr and Robert Litan, “The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data”; William Lehr, Carlos Osorio, Sharon Gillett and Marvin Sirbu, “Measuring Broadband’s Economic Impact” presented at the 33rd Research Conference on Communication, Information, and Internet Policy (TRPC). See also Crandall and Jackson, “The \$500 Billion Opportunity: The Potential Economic Benefit of Widespread Diffusion of Broadband Internet Access,” (2001); Robert Litan, “Great Expectations: Potential Economic Benefits to the Nation from Accelerated Broadband Deployment to Older Americans and Americans with Disabilities,” New Millennium Research Council, Washington, DC. Available at: http://www.newmillenniumresearch.org/archive/Litan_FINAL_120805.pdf.

⁶² Measuring the impact of broadband is challenging for several reasons, not the least of which are ambiguities in definitions of broadband used in different studies, the aforementioned lags between installation of infrastructure and its adoption by large numbers of households or firms, and the realization of economic impacts. Most importantly, we are just at the beginning of broadband networks’ life cycle and the full impacts are only hinted at by recent historic data. Broadband in this country is still an “infant industry” as measured by the percentage of households connected, the linespeeds of those connections and the applications commonly used.

part reflected in lower subscriber rates; increases in available cash will in part be converted to increased investment.

- *Link Three.* Lower rates will stimulate growth of connections and the number of broadband subscribers. The increase in subscribers will, through the well-known phenomenon of network externalities, increase the value of the network for existing and potential new subscribers. New investment is stimulated and will (a) increase the geographic reach of networks; (b) increase network functionality and (c) improve the business case for innovation and investment by other stakeholders in the value chain—content providers, applications providers and others.
- *Link Four.* The preceding expansion of investment and output will be accompanied and reflected as well by increases in other measures of economic activity in the sector – in particular, the direct effects will be increases in jobs, personal and business income, sales, wealth and real property valuation increases.

The foregoing illustration was predicated on an assumed tax reduction. The same chain of cause and effects would apply for a tax increase. The signs of the impacts would change from positive to negative and the real world impacts would be transformed from stimulation by government of value-creating activities to suppression of those and the incurrence of costs of foregone value. These are not merely stylized, hypothetical reactions to broadband tax changes. They are reflected in the facts of the operation of the economy. Details of impacts are suggested in the summary of expert commentary below.

C. What the Experts Say: Selected Conclusions from the Literature

Illustrative results from the dramatically expanding and diversifying literature on the impacts of broadband suggest the following kinds of impacts:

- “...between 1998-2002, communities in which mass-market broadband was available by December 1999 experienced more rapid growth in (1) employment, (2) the number of businesses overall, and (3) businesses in IT-intensive sectors. Also, broadband availability by 1999 can be observed in higher market rates for rental housing in 2000.”⁶³

⁶³ Sharon E. Gillett, William H. Lehr, Carlos A. Osorio, Marvin A. Sirbu, Measuring Broadband’s Economic Impact, prepared for the U.S. Department of Commerce, Economic Development Administration, February, 2006.

- "...broadband, acting through changes to consumers' shopping, commuting, home entertainment and health care habits, would contribute an extra \$500 billion in GDP by 2006."⁶⁴
- The New Millennium Research Council estimated 1.2 million jobs were created from the construction and use of a nationwide broadband network.⁶⁵
- "...failure to improve broadband performance could *reduce* U.S. productivity growth by 1% per year or more."⁶⁶
- "...nonfarm private employment and employment in several industries, is positively associated with broadband use. More specifically, for every one percentage point increase in broadband penetration in a state, employment is projected to increase by 0.2 to 0.3 percent per year. For the entire U.S. private non-farm economy, this suggests an increase of about 300,000 jobs, assuming the economy is not already at "full employment..."⁶⁷
- "...employment in both manufacturing and services industries (especially finance, education and health care) is positively related to broadband penetration...[and] state output of goods and services is positively associated with broadband use."⁶⁸
- ICT added 1.18 percentage points to GDP growth and accounted for 2/3rds of the growth in total factor productivity during the second half of the 1990s at a time when ICT assets accounted for less than 5 percent of the capital stock.⁶⁹
- Though ICT's contribution to growth is lower than in the last half of the 1990s, it remains sizable. A recent study concludes that ICT contributed 59 percent of the growth in labor productivity from 1995 to 2000 and 33 percent from 2000 to 2005.⁷⁰

⁶⁴ Id.

⁶⁵ Stephen B. Pociask, Building a Nationwide Broadband Network: Speeding Job Growth, February 25, 2002. Available at: <http://www.newmillenniumresearch.org/archive/jobspaper.pdf>

⁶⁶ Charles H. Ferguson, "The U.S. Broadband Problem", Brookings Policy Brief # 105, 2002. Available at: <http://www.brookings.org/printme.wbs?page=/comm/policybriefs/pb105.htm>

⁶⁷ Robert Crandall, William Lehr and Robert Litan, "The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data". Available at: <http://www3.brookings.edu/views/papers/crandall/200706litan.pdf>

⁶⁸ Id.

⁶⁹ Dale Jorgenson, "Information Technology and the U.S. Economy," *American Economic Review*, Vol. 91, Number 1 (March 2001) 1-33.

⁷⁰ Dale Jorgenson, Ho Mun, and Kevin Stiroh, "A Retrospective Look at the U.S. Productivity Growth Resurgence," draft mimeo, Federal Reserve Bank of New York, February, 2007.

- About 1/3 of the per capita GDP growth (0.59 of the 1.96 percent per year growth rate) across 21 OECD countries from 1970 to 1990 has been attributed to telecommunications infrastructure investments.⁷¹
- Telecom and broadband investments yield excessive returns compared to other forms of infrastructure.⁷²
- In developing countries, 10 percent higher mobile phone penetration would result in 0.59 percent higher GDP growth.⁷³
- Telecommunications infrastructure promotes productivity growth in individual service sectors within states.⁷⁴
- U.S. firms have adopted Internet business solutions more intensively than European firms and this helps explain why U.S. productivity growth has outstripped European growth over the past decade. Based on a survey of over 2,000 firms across the economy, researchers find that Internet business solutions already have added significantly to business revenue growth and cost-savings (a net gain of almost \$600 billion in the U.S. by 2001) and they estimated that Internet business solutions will add 0.43 percentage points to future productivity growth through 2011.⁷⁵
- Canada's slower productivity growth, relative to the US is in part attributable to its less intensive use of ICT. Analysts attribute 60 percent of the difference in Canada's slower labor productivity growth in 2003 to differences in ICT use and its attendant spillover benefits.⁷⁶

⁷¹ Lars-Hendrik Roller and Leonard Waverman (2001), "Telecommunications Infrastructure and Economic Development: A Simultaneous Approach," *American Economic Review*, vol. 96, no. 4, 2001, pp. 909-923.

⁷² Leonard Waverman, Meloria Meschi and Melvyn Fuss, "The Impact of Telecoms on Economic Growth in Developing Countries, Vodafone Policy Paper Series, Number 2.

⁷³ Id.

⁷⁴ Serdar Yilmaz and Mustafa Dinc, "Telecommunications and Regional Development: Evidence From the U.S. States," *Economic Development Quarterly*, 2002, Vol. 16, No. 3 (August) 211-228.

⁷⁵ Hal Varian, Robert E. Litan, Andrew Elder, and Jay Shutter, "Net Impact Study: the Projected Economic Benefits of the Internet in the United States, United Kingdom, France, and Germany," 2002. See, http://www.momentumresearchgroup.com/downloads/reports/netimpact_2002/net-impact-us-euro.pdf.

⁷⁶ Melvyn Fuss and Leonard Waverman, "Canada's Productivity Dilemma: the Role of Computers and Telecom," report prepared for Bell Canada's submission to the Telecommunications Policy Review Panel, 2006 (updated results included in "The Networked Computer: the Contribution of Computing and Telecommunications to Economic Growth and Productivity," London Business School Working Paper, DT05-001-2005).

- Firm-level data suggest that firms that use ICT more intensively innovate more and thereby generate larger spillover benefits and productivity gains.⁷⁷

The thrust of the diverse findings from this small sample of research on links between IT investment and general economic performance are clear and consistent. Broadband tax forbearance that stimulates investment in the broadband ICT sector will stimulate economic performance in other parts of the economy. One review of these and related results published earlier this year concluded:

“In particular...results [of studies of economic impacts of broadband telecommunications investment] suggest that all levels of government should follow policies that encourage broadband competition, which will lead to lower prices and hence greater use. It should be noted, however, that increased use will require an expansion of supply, specifically greater investment by service providers in broadband infrastructure, which already is facing capacity constraints as new applications, such as video streaming, become ever more popular. It is critical, therefore, that new regulatory policies [tax policies included] not reduce investment incentives for these carriers.”⁷⁸

The macroeconomic benefits of broadband characterized above are not evenly distributed throughout sectors and activities of our national economy. They are summary indicators that reflect countless different applications of broadband technology to improving economic performance and solving particular economic problems. The applications vary from sector to sector and activity to activity, but taken together they account for enormous benefits growing from better service, higher productivity, lower prices and general improvements in our collective ways of living. Many of the improvements enabled by broadband are not captured in the macro data, which are collected according to pre-Internet definitions of commerce, economic activity and industrial sectors. But, they do show up in studies of sectoral impacts and benefits related to particular national objectives – security, environment, energy, health care and others.

There is a large and growing literature focused on identifying and estimating contributions of broadband to how we do business, entertain ourselves and commune with each other. These take various names: e-Commerce,

⁷⁷ Phillip Koellinger, "Impact of ICT on Corporate Performance, Productivity and Employment Dynamics," e-Business W@tch, European Commission, DG Enterprise & Industry, Special Report No. 01/2006.

⁷⁸ Crandall, Lehr and Litan, 2007.

TeleMedicine, TeleEducation, TeleCommuting, Distance Learning, e-Government, Supply-chain Management, etc. The actual list is much longer, but these reflect the breadth and depth of broadband into our economic and social lives.

The benefits of these applications show up in different ways: fuel savings, environmental preservation, more widely available professional services, services tailored to meet the particular needs of the elderly, minorities, Americans with special needs, low income families; services that reduce cost and increase quality of health care; and others. Given the ability of broadband telecommunications to substitute for human travel, broadband investment stimulated by tax forbearance promises savings of fuel and time; reductions in the need for transport investment; reductions in harmful emissions, and the realization of a wide range of other “green goals.”⁷⁹

To be sure, there is more than a modest amount of hyperbole in claims about the “New Economy”, the “Information Age”, the passing of “Industrial Age”, and, simply, “The Internet”. But, history will surely record that current estimates of the value of expansion of broadband networks and new applications solving old problems fell short of what actually materialized.

D. Telecom Tax Reform as an Anti-cyclical Device

⁷⁹ Joseph P. Fuhr Jr. and Stephen B. Pociask, “Broadband Services: Economic and Environmental Benefits”, The American Consumer Institute, Oct.31,2007 summarize an exhaustive survey of the literature analyzing environmental impacts of broadband as follows:

This study finds that advances in information technologies, in particular the use of broadband Internet services, computers and telecommunications technologies, produce significant environmental benefits while augmenting productivity and economic growth. How these technologies help the environment is evident in where we work, how we shop and what we consume. For instance, electronic communications are reducing the demand for first-class letters and newspaper subscriptions, which, in turn, reduces the need for paper, saves trees, conserves energy, pollutes less water and emits less greenhouse gases into the atmosphere. As workers telecommute from home or remote locations, billions of gallons of gasoline are saved. E-commerce means that less square footage of commercial, retail and wholesale facilities are needed, which saves the energy required to build and operate these facilities. As workers teleconference, business travel is reduced, sparing carbon and other emissions as well. In short, high-speed Internet services and other technologies are affecting how consumers and workers shop, travel, work and use products, and, as this study shows, the benefits to the environment can be significant.

At the time of this writing the macroeconomy continues, through a variety of metrics, to display clear evidence of deepening economic recession.⁸⁰ Growth is negative, unemployment is rising, holiday sales are down dramatically, domestic investment is stagnant, and consumer confidence continues to diminish.⁸¹ These and other signs of economic distress in the production sector are both dwarfed and magnified by the almost indescribable, but continuing, crises in credit markets, beginning with home mortgages and consumer credit, but infecting as well the supply of liquidity in general to businesses large and small. The beginning of the current crisis is marked by the collapse of the market for so-called “sub-prime” mortgages repackaged and securitized as means to finance the dramatic expansion of home ownership in recent years, but has spread to touch virtually every corner of the US and global economy.⁸²

Governments typically respond to slackening economic performance by lowering taxes, raising spending and/or related efforts to stimulate aggregate demand. The current distress in the macroeconomy is sufficiently broad, deep and diverse that consideration of traditional efforts is being joined by consideration of a variety of what for a better term might be called “reregulation” of financial markets, as well as by a variety of Federal “bailouts”; that is, government acquisition of ownership of troubled assets as a condition of transfer of hundreds of billions of government funds to private firms.⁸³

⁸⁰ The National Bureau of Economic Research is the generally accepted source for judging whether assorted macroeconomic metrics constitute a “recession.” It has generally characterized recession as two consecutive quarters of negative growth in GNP. Accordingly, it declared on December 11, 2008 that: “The committee determined that the decline in economic activity in 2008 met the standard for a recession...” NBER, Business Cycle Dating Committee, National Bureau of Economic Research, *Determination of the December 2007 Peak in Economic Activity*. <http://www.nber.org/cycles/dec2008.html>.

⁸¹ Swiss Re Economic Research and Consulting, “U.S. Economic Outlook”, December 2008, pp. 1-2. <http://www.swissre.com/resources/703367004c2ef3098842bd32638cee3c-USOutlook.pdf>

⁸² The current financial crisis cannot be quickly described, but is clearly of epic proportions. It involves virtually all financial assets and instruments including real estate and mortgages, stocks and bonds, commodities, currencies and an array of new financial products that simply did not exist a decade ago. It is world wide and being reflected in both developed and developing economies. Several large financial services entities have already collapsed, while others, including the domestic auto industry, are on the brink. Frozen credit markets have complicated efforts of firms in manufacturing, retail and services to grow or sustain operations. The value of most collateral for guaranteeing debt is declining. For a wide-ranging, topical view of the state of financial markets and the economy as of Monday, December 15, 2008, see “The Financial Crisis”, Wall Street Journal, <http://online.wsj.com/public/page/wall-street-in-crisis.html>

⁸³ For a recent summary of various Federal government initiatives, see Elaine Buckberg and Ronald I. Miller, “Economists’ Views: New Playbook for a Financial Crisis”, NERA, October 21, 2008. http://www.nera.com/image/PUB_Paulson_New_Playbook_10.22.08.pdf

There is a clear dichotomy between broadband tax-related proposals at the Federal level and those being considered by a variety of state and local governments. Federal authorities and the transition team of President-elect Obama intend to complement traditional pump-priming approaches to stimulate demand with efforts to shore up credit markets and to look for both market failures and regulatory fixes. As part of a much larger economic stimulus package driven in substantial measure by the goal of the incoming Obama administration of creating or preserving jobs, the Federal government is considering initiatives to underwrite accelerated development of roads, bridges, schools, and to incent energy efficiency enhancing measures.⁸⁴ There is also under discussion as a part of the Federal infrastructure support initiative assorted proposals to stimulate investment in broadband networks through investment tax credits, accelerated depreciation allowances, or related broadband tax incentives.⁸⁵

In sharp contrast, however, there are alarming signs that non-Federal government officials are inclined to raise taxes in order to close the gap between spending plans formed during economic expansion and shrinking tax receipts realized during the contraction. The result would of course be contractionary and particularly so if the rapidly growing IT sector is targeted for increased taxation as seems to be the inclination in many jurisdictions.⁸⁶ In view of the leverage of the broadband sector in creating economic value – growth, jobs, income, productivity – in other sectors and in other tax bases like income, property, earnings, investment and others, telecom tax reductions are a particularly attractive option during the current financial crises and deepening recession.

It is counterintuitive to observe the Federal government undertaking to stimulate investment in broadband network development while individual state and local authorities are planning to suppress it through higher taxes. It is doubly so given the frequency with which state and local jurisdictions have put in place

⁸⁴ Jon Hilsenrath and Jonathan Weisman, “Obama Signals Big Stimulus Plan: Package Is Expected to Include Long-Term Spending to Combat Extended Downturn”, Wall Street Journal, November 25, 2008. http://online.wsj.com/article/SB122753584294452995.html?mod=googlenews_wsj

⁸⁵ Corey Boles and Fawn Johnson, “Stimulus Plan to Include Internet-Access Funds”, Wall Street Journal, December 2, 2008 <http://online.wsj.com/article/SB122825292368073455.html>

⁸⁶ These points are developed more fully in an American Consumer Institute ConsumerGram entitled: “Combating Recession through Telecommunications Tax Reform”, available at: <http://www.aci-citizenresearch.org/IT%20Tax%20Reform.pdf>. In surveying current press reports identified in an extensive search online, we were unable to identify a state or local jurisdiction that is not at this writing being challenged to close budget deficits. There may be some, but the limited exceptions prove the rule. In addition, most jurisdictions are addressing deficits in part by raising taxes further on telecommunications services that are already taxed well above the average. (See Section II.C above.)

other programs designed to stimulate broadband network development.⁸⁷ And, as suggested above, while the benefits of state and local taxes are enjoyed in those jurisdictions, the costs are in significant part shifted to users and businesses in other jurisdictions as a result of the externalities associated with national, interconnected networks.⁸⁸

VI SUMMARY AND CONCLUSION

As stated at the outset, the goal of this paper is to evaluate the impact of broadband network and services tax forbearance and, in particular, to adduce evidence useful in determining if doing so is a good investment for state and local governments.

Rules governing the choice of both private sector and public sector investments are straightforward in principle. Capital budgeting techniques indicate the need to examine, for a given investment, whether the present value of current and expected benefits exceeds the present value of current and expected costs. In that sense, evaluating government investment in transport or education or health care or fire and police protection should be subject to the same rules used to evaluate the returns from inducing private sector investment in broadband networks by foregoing taxing them and foregoing use of funds that would otherwise have been available. The question is whether the benefits of broadband investment and consumer welfare stimulated by tax forbearance exceed the costs of giving up government services and/or raising funds from taxes on other undertakings.

On the benefit side, our analysis leaves no room to doubt the existence of substantial dividends in economic welfare available from state government forbearance from taxing broadband services. Broadband is truly a “supersector”, in the sense of being extraordinarily leveraged in bringing about economy-wide benefits from even modest increases in investment and utilization of broadband services.

We have concentrated on the benefits of broadband tax forbearance, but while aware of the costs of doing so, we do not address them. Broadband tax forbearance may necessitate reduced provision of some government services, reduction in government employment and/or increase in taxes of other forms on other economic bases. While any cost-benefit analysis is incomplete without

⁸⁷ See Section II. F above.

⁸⁸ See Section II.G above for discussion of this point in the context of the value of having a national tax framework to address what are clearly national telecom networks.

estimating these, doing so is beyond our purpose here. We leave their estimation and proof for others and invite comparison to the benefits from forbearance.

Developments in the financial sector and the larger economy, ongoing and uncertain as to outcome as this is written, will concurrently exacerbate short term, state and local budget difficulties and, ironically, make it all the more imperative for fiscal authorities to look at ways to create jobs, income, wealth and economic activity in the short and longer term. State and local fiscal authorities who break with past practice and forego the temptation to impose well above average taxes on broadband communications networks and services will unquestionably promote growth in broadband investment and expansion of network service. They will also help restore the economy to its historic path in creating jobs, income and economic opportunity.

We conclude that available evidence, reasonably assessed, indicates that tax forbearance with respect to wireline, wireless, and cable networks providing both legacy voice and data services, but increasingly used to provide broadband service, is a good government investment.

ATTACHMENT 4

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The Value of Broadband and the Deadweight Loss of Taxing New Technology

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The Value of Broadband and the Deadweight Loss of Taxing New Technology*

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Abstract

With fixed costs of developing technology, taxes can generate large efficiency costs by slowing the rate of diffusion and these costs are not accounted for in conventional analyses. This paper illustrates the potential importance of this idea in the context of taxes on broadband Internet access at an early stage of its existence by combining data on individual demand by area with data on supplier entry into those markets. Applying a tax to broadband in 1998 would have reduced the quantity and generated a large deadweight loss in the conventional model but when the analysis accounts for the fixed costs of entering new markets, taxes lead to delayed entry in several markets. In these places, the lost consumer surplus is additional deadweight loss and it more than doubles the true efficiency costs from taxation. The conventional model also dramatically understates the share of the tax burden borne by consumers.

KEYWORDS: taxation, broadband, deadweight, loss, diffusion

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1. Introduction

Despite a growing literature dealing with the importance of new goods, there has been little analysis of whether the continued introduction of new goods has any implications for tax policy.¹ This paper shows that the impact of taxes on technology diffusion has the potential to be quite significant if there are fixed costs associated with introducing the new goods. Using, as a practical example, data on the market for broadband Internet access when it first began to spread widely, the results suggest that the true deadweight cost of taxation can be several times larger and the incidence borne much more by consumers than indicated by a traditional tax analysis.

The case of taxes and broadband is interesting in its own right, as well. Considerable debate arose over the Internet Tax Freedom Act and its subsequent extensions which placed a moratorium on state taxation of Internet access. Legislation currently before Congress would permanently ban taxes on internet access. The states have opposed these measures, realizing the large revenue potential of such taxation.² On top of that, there is considerable interest on the part of policy makers and the general public in the spread of broadband and the existence of a "broadband gap" between the U.S. and countries thought to be farther along the technology frontier, as well as concern about a "digital divide" separating rich, urban people from their poorer and more rural

1 The recent work in Industrial Organization is discussed in Trajtenberg (1989), Bresnahan and Gordon (1997), Hausman (1999), Petrin (2002), Nevo (2003) and Goolsbee and Petrin (2004). There are a few examples of work on tariffs and new goods (Romer, 1994; Feenstra, 1995; Klenow and Rodriguez-Claire, 1997) and papers on the welfare costs of regulatory delay such as Hausman (1997; 1998).

2 Goolsbee (2001) points out that the potential revenue from applying sales tax to Internet access probably exceeds the entire revenue loss from not enforcing sales taxes on Internet purchases. Mazerov (2003) summarizes the states' position opposing the ban on access taxes because it will

counterparts in their use of advanced technology.³ Though the market was decidedly different in the early years of broadband than it is now, many of the same issues that faced larger markets then may apply in smaller markets today.

The paper will use data on individual level demand for broadband across locations to construct market specific demand curves and use them to do an analysis of broadband taxation. The results suggest that at the time of the survey (late 1998/early 1999), the consumer surplus from broadband was about \$667 million per year in markets where it was available and that the demand was highly elastic. As a result, the deadweight loss from taxing broadband in 1998, as computed in a standard analysis, would have been quite high, at almost 200% of the revenue such a tax would have generated. The tax would have been borne about 55% by consumers.

Looking deeper, however, the paper is able to use the computed producer surplus in each market to estimate the implied size of the fixed costs of entering a new market (or at least of entering on the more limited scale that characterized entry at that time). It then shows that in several medium sized markets, applying a tax on broadband would have reduced the potential producer surplus enough that suppliers would not be able to

deny them considerable revenues.

³ Popular discussion of the 'broadband gap' can be found in Bleha (2005) or Rosenbush et al. (2004). Academic work on the spread of Internet access and the 'digital divide' include Downes and Greenstein (1998), Hoffman and Novak (1999), Compaine (2001), and Goolsbee and Guryan (2006). There has been work on how people's use of the Internet responds to prices (see, for example, Varian, 1999, Beckart 1999, the discussions in Mackie-Mason and Varian, 1995 or the papers in McKnight and Bailey, 1997). This literature has become less relevant for analyzing taxes on access, however, since most Internet Service Providers (ISPs) currently charge a flat monthly fee for unlimited use. Bruce et al. (2004) examine the impact of taxes on overall Internet access rates and find no effect. Likewise, Goolsbee (2000) finds no significant impact of sales taxes on access. Both of these papers relate mainly to dial-up Internet access so are less relevant to the issue of rolling out broadband.

cover their fixed costs and would choose to delay the diffusion of broadband in those markets. By doing so, however, the tax would have eliminated the entire potential consumer surplus from those markets (as well as the firm profits) in the interim. Those losses are pure deadweight loss (DWL) and are large. Taking account of the impact of taxes on the spread of the new technology more than doubles the estimated DWL from the tax as compared to the standard model. The incidence of the tax is also substantially more heavily born by the consumer than in the conventional calculation.

The paper proceeds in six sections. Section 2 presents an overview of the theory behind evaluating taxes on new technologies. Section 3 describes the industry and the data and estimates the demand curves. Section 4 presents a conventional tax analysis. Section 5 then estimates the fixed costs of entry into new markets and adds an analysis of how taxes affect diffusion in this market and the ways that changes the main tax results. Section 6 concludes.

2. Theory

The basic idea of why taxes might have a different impact when there are new goods rests on the existence of fixed costs and follows on the insight of Romer (1994) that tariffs can have large negative welfare effects if they lead to fewer goods being imported into a small country.

Consider the market for broadband where the supplier has market power as in Figure 1.⁴ In a conventional analysis of taxes in such a market, imposing a tax will

4 At the time of this sample, residential broadband was provided almost exclusively by local cable

reduce the quantity and create a deadweight loss that depends on the elasticity of demand (see Sumner, 1981 for a traditional exposition). Without taxes, the supplier sets marginal revenue equal to marginal cost and produces Q_0 which it sells to consumers at P_0 . A per-unit tax on the seller, this raises the marginal cost curve to the dashed line in the figure. The after tax price to the buyer rises to P_T and the quantity falls to Q_T . The government raises revenue equal to area D from this tax. The consumer surplus after the tax falls from $A+B+E$ to just A. The producer surplus goes from $C+D+F+G$ to $B+C$. The DWL of the tax is the entire area of lost consumer and producer surplus, net of taxes: $E+F+G$. To compute the incidence, one simply compares the increase in consumer prices ($P_T - P_0$) to the amount of the tax to get the consumer share.

But now think of a world in which there are many potential markets such as the one presented in figure 1. They have different sizes and before the firm can produce in the market, it must first decide whether to enter at all. If it does so, the firm must pay some fixed cost FC . Without a tax, a firm will enter if the producer surplus in the market, $C+D+F+G$, exceeds FC . After the tax, though, the potential producer surplus in the market is just $B+C$. So long as $B+C$ stays greater than FC , the firm still enters the market and the conventional tax calculation is correct. Wherever $C+D+F+G > FC > B+C$, however, the tax reduces producer surplus enough to prevent entry.

The DWL from the tax in those markets equals the entire producer and consumer surplus. This certainly has the potential to be large, since the entire surplus in a market usually dwarfs a traditional DWL triangle, but the practical importance of this kind of

monopolies. Faulhaber and Hogendorn (2000) show that for almost all realistic levels of demand

efficiency cost depends entirely on the actual magnitude of the fixed costs and the number of places that might be on the margin of being bypassed. This paper will use the case of broadband at an early point in its diffusion to illustrate that, in practice, the idea may be quite important indeed.

The incidence of the tax in figure 1 will also be changed. Rather than compute the consumer share of the burden as the change to after tax prices relative to the size of the tax, as in the standard approach, one ought to also account for the losses in markets that are bypassed just because of the tax. To the extent that new goods generate large consumer surplus but only modest producer surplus (in excess of the fixed costs), the incidence will tend to be borne significantly more by consumers than in the typical estimate.

3. Industry Background and Data on the Demand for Broadband

A. Broadband and Cable Modems

Broadband, and specifically cable modems allow Internet users to receive data from the Internet over their cable line rather than over conventional telephone wires. This allows the user to access the web at speeds up to 100 times faster than standard dial-up modems. At the time of this sample broadband accounted for only 2-3 percent of online users (Mines, et al., 1998; Strategis Group, 1999), but was growing rapidly. The subscriber base grew from less than 40,000 in 1996 to about 750,000 by mid-1999, and analysts at the time forecast that by 2002 or 2003, the number of broadband users could

growth that providers might have made at the time, there would be oligopoly at the least.

range between 4 million and 27 million (Mines et. al, 1998; Kinetic Strategies, 1999; Kasrel et al., 1999; CATC CyberLab, 2000; Gillett and Lehr, 2000). The actual number in 2002 was 20 million (C.B.O., 2004).

Although the major current residential competitor to cable modems is DSL, a service provided over telephone lines, at the time of this sample residential DSL had extremely limited availability (see Gillett and Lehr, 2000). Indeed, even now, cable modems continue to have a dominant market share of residential customers. At the time of the sample in this paper, cable modems were widely regarded as the superior consumer choice (PC World, 1999). For purposes of analyzing the broadband entry decision circa late 1998/early 1999, the local cable monopoly can be viewed as, effectively, having a local monopoly on residential broadband access. The typical fee for broadband access through a cable modem at the time of the survey was about \$40 per month.

In considering the cost structure of the cable modem industry, it is important to note that the standard marginal cost in the sense of the cost of providing an additional minute of access, is close to zero. The marginal costs facing the system are best thought of as marginal costs per *customer* rather than per minute. Fixed costs, in this setting, will be costs that are shared across customers in the same metropolitan area. For a cable company to provide service in an area, they must incur the fixed cost of entering the market and then a one time marginal cost for each household that signs up for the service. From those subscribers, then, the cable company receives a flow of revenue. For simplicity, I will sometimes compute this as a lump-sum NPV equivalent assuming

that the cable company has a 10 percent discount rate and expects to have the customer for five years at current prices, after which time the cable company gets nothing—either new technology makes the current cable modems obsolete or new competitors drive profits to zero. The choice of discount rate and customer life makes virtually no difference to the main results.

In practice, the marginal costs of adding a customer include the installation and upgrade of the coaxial cable "drop" to the individual home, at least some part of the customer acquisition costs, customer premises equipment (cable modem, etc.), and whatever expected maintenance might be required. In total, JP Morgan (2001) estimates this to be between \$600 and \$1200 in 2001. Gillett (1995) suggest that just the engineering cost side was likely to be greater than \$2000 in 1995. Owen (1999) and Carriere (2001) also report costs somewhere between these estimates. So these per customer costs could be considerable at the time of the sample in late 1998.

The fixed costs include all costs shared over multiple customers in the same market including upgrading the shared cable line to be two-way and digital, upgrading the head-end electronics, the costs of extensive marketing efforts, the costs of establishing and operating a new type of billing and a customer care center, among others (though some of these costs would be incurred anyway if a cable system upgraded to digital in order to compete with satellite, as I will discuss later). The size of these fixed costs can be quite substantial and they are the reason that cable providers do not offer cable modem service to any customer willing to pay for the marginal costs of hooking up their individual home. They must get a large enough group of subscribers to

make it worthwhile to enter a market. These fixed costs are the key to understanding the impact of taxation in an innovative industry.

There may be some costs that are not marginal in the sense of being per customer but nor are they fixed across the entire city. Cable companies might have fixed costs at a smaller level than city-wide, for example, if they were going to upgrade part of their local networks or something like that. In this sense, the most accurate model might be to look at markets at the neighborhood level rather than at the city level. Practically speaking, the data are not sufficient to allow a more detailed geographic analysis. That said, many of the fixed costs will be at a broader level than the neighborhood and in most urban areas, upgrading the network involves the expensive digging up of the street to get to the cable lines. There are some definite economies of scale to doing such work simultaneously rather than piece by piece. It is also expensive to have part of the network being modern and part being antiquated so companies tend to upgrade most everything at one time. A general piece of evidence supporting the idea of fixed costs at a broader level than just the neighborhood is that although there were some pilot programs testing broadband in limited areas, cable companies in large markets typically offered service to a large number of areas and they did not offer any service in smaller metro areas even if there were small pockets of potential highly educated, high-income customers. Indeed, outside of the top 50 metro areas, virtually no company offered residential broadband whatsoever.

B. Data

To estimate the impact of taxes in this market, I combine several sources of data. The availability of cable modems at the time of the survey (late 1998) comes from PC World (1999). It is important to note that entry at that time was less dramatic than today. When cable companies introduced capacity, take-up rates were typically very low—around 3-5%. While it would be preferable to model the entry into smaller geographic units than the metropolitan area, the data do not allow it.

Next, I match the PC World data to individual level data on people's willingness to pay for broadband as given in the surveys of Forrester's *Technographics 1999* program. Forrester is a leading market research company which studies the information economy. Each year it conducts a survey of close to 100,000 people about their usage of various products as well as demographic information. More detail on the Forrester survey can be found in Bernhoff et al. (1998). The precise question involved asks how much the consumer would be willing to pay (in dollars per month) for high-speed Internet access up to 100 times faster than on conventional modems. Their answers are of the form "Less than \$5", "\$5-\$15", "\$15-25", and so on, up to "\$65+." Summing these individual demand curves in each of the top 69 metro areas gives market level demand curves even for markets where there is no broadband access yet. These 69 areas account for approximately 75% of the U.S. population. I will use only people reporting reservation prices of at least \$15 per month to keep those people with reservation prices far from the equilibrium prices from influencing the shape of the estimated demand curve.

Although these demand curves are not based on transactions data, such

transaction data has limited value for calculating consumer surplus. One wants to know the area under the entire demand curve and transaction data estimate the demand curve only in places near the equilibrium. One typically extrapolates a functional form out to the price axis to make the welfare calculation. Here, rather than assume a functional form from the demand around the equilibrium points, the demand curve will take the functional directly from the respondents' stated preferences. To verify that the stated preferences also match the observed transaction data in the range surrounding actually observed prices I will present several independent pieces of confirmatory evidence.

C. The Demand Curves

As an example of the market level demand curves, Figure 2 presents the results from the San Francisco metropolitan area. There are 69 such curves: one for each market. Price per month is on the vertical axis and the number of respondents who would purchase broadband at that price is on the horizontal axis. As there are 1,680 respondents from the Bay area and 2.4 million households in that market, each respondent represents about 1410 households (Nielsen, 1999).

For each of the markets, I then fit a quadratic inverse demand curve to the data and use that equation for the tax analysis.⁵ There was no qualitative difference for the results from using a log linear demand curve and capping reservation prices at the

5 These demand estimates will not include prices of dial-up Internet service. Although this would seem to be an important substitute for broadband, the data do not bear this out. In independent merger cases where they evaluated the evidence on the subject, both the Department of Justice and the FCC have ruled that the two are separate markets (FCC, 2001; U.S. Department of Justice, 2001). Using micro data, Rappoport et. al (2001) estimate the cross-price elasticity of broadband demand with respect to dial-up price and find it to be miniscule (elasticity of broadband only 0.02).

highest reported level or from using a piecewise linear demand curve.⁶ The demand curve estimated for the San Francisco metro area, for example is

$$P = 57.15 - .2814 Q + .00044 Q^2 + \varepsilon$$

(5.63) (.0839) (.00019) R²=.90, n=6

At the market price of about \$40 per month, the elasticity of demand in San Francisco is -2.65. The elasticities at that price are listed for all of the markets in the first column of table 1. They range from -2.15 to -3.76 with an average of around -2.75. The R² in every equation was quite high.⁷

Several things suggest that these demand curves match well to contemporaneous estimates of broadband elasticities using transaction data. The price elasticity of demand for high bandwidth in the Berkeley INDEX randomized experiments was generally between -2 and -3. Kridel et al. (2000) use cross-city variation in prices to estimate an elasticity of demand for broadband and find it to be about -1.8 at a price of \$49.95. A previous version of this paper used the price differences for broadband between cable television subscribers and non-cable television subscribers to identify the price elasticity of subscribing to broadband (in markets where it was available at the time of the survey, of course), while controlling for extensive household level demographics. Depending on the specification, the elasticity ranged from -2.8 to -3.5.

⁶ I will use the quadratic rather than the piecewise linear because it is easier to deal with and because a standard result from the public finance literature is that the incidence of a tax on a monopolist with a linear demand curve is split evenly between the producer and the consumer. Since incidence is one of the main topics of interest, I did not want to impose linearity. In a previous version of this paper, I also checked the robustness of this functional form by allowing for a log-linear demand curve with a cap on the valuations at the highest stated price. The basic findings about DWL and incidence were the same in that case.

⁷ To save space, the tables do not list the coefficients separately for all 69 regressions. These are

In addition, the reservation price data suggest that among Internet users who live in places without cable modem access, about 4.7% would be willing to pay more than \$35 per month and about 2.0% more than \$45 per month for broadband access. The actual take-up rates in the data in the areas that did have access (where prices were about \$40 per month) was about 2.2% and the take-up rate among those actually having the ability to get access computed in other sources was somewhere between about 3 and 5% (see Kinetic Strategies, 1999 and Gillett and Lehr, 1999).

The match also works well by education level. The share of people in the Forrester data with only a High School education who claim they would pay \$45 or more for broadband was 1.4% compared and 3.8% at \$35. Kridel et al (2000) show that the actual take-up rate among people with a high-school diploma was comfortably in between at around 2.5%. For people with some college education, 2.5% say they would be willing to buy at \$45 and 6.0% at \$35. The actual was around 4%.

Income tabulations also show similarity. In the Forrester data, the share of people earning \$75,000 or more who would buy at \$45 was 2.8% and at \$35 was 6.3%. In the transaction data, where the market price was in between those two levels, the actual adoption rate was 5.5%. For people earning \$45-75,000, 1.9% would buy at \$45 and 4.8% at \$35. The actual data put the take-up at 3.2%. Given the rather tight match of these results with the ones using transaction price data, I will take the reservation price information in the survey data as accurate.

available from the author upon request.

4. Equilibrium and a Conventional Tax Analysis

From these demand curves, if all the top 69 markets in the United States had broadband access at the time of the sample, aggregate demand in late 1998 would be about 1.6 million households. The market price for each market comes from assuming the local cable monopolies have constant marginal cost and price in a Bertrand manner according to the standard monopoly mark-up formula. The average elasticity in markets that actually had cable modem access at the time of the sample was -2.75 and the average actual market price was approximately \$40. This implies a MC of about \$25 per month or \$300 on an annualized basis. This is in the same ballpark as the actual per-customer costs described in Owen (1999) and very close to the cost estimates in Carriere et al. (2000). I will assume it to be equal across markets.

Given this marginal cost, the quadratic inverse demand curves imply a marginal revenue function in each market. Setting the two equal yields the quantity sold and plugging into the demand curve yields the market price. In the calculations here, the projected market prices across areas form a relatively tight band around \$39.50 per month. This prediction comports well with reality in that there was not much actual variation in prices of existing broadband services across markets at the time of the sample.

The consumer surplus and producer surplus in each market, as derived from the estimates, are listed in the second and third columns of Table 1.⁸ There are 69 but the table lists only the top 50 markets to save space. Summed across all the markets, the

⁸ To get the numbers into comparable units, I weight each city by the average number of

total consumer surplus adds up to about \$955 million per year (restricting to only those markets that actually had service at the time of the survey, the total was \$667 million).

Using this demand and cost set up, a standard tax analysis is straightforward. Although the Internet Tax Freedom Act forbid the states from applying sales tax to internet access, we can explore the impact of a tax of that magnitude in these data. The median state sales tax at the time was 5% which would correspond to something like a \$2 per month tax on a \$40 per month service. To avoid any complications associated with the differences between *ad valorem* and specific taxation, let us consider the simplest form of the tax, a \$2 per month Internet access tax paid by the cable company which is the equivalent of raising the marginal cost from \$25 to \$27 per month. Solving for the equilibrium in each market, this would raise the average equilibrium price to \$40.60 from \$39.50 (differently in each market, of course). The share of the tax born by consumers in different locations ranges from 50 to 60%. After the tax, the total quantity summed across all the markets falls from 1.63 million to 1.51 million. The total revenue raised from the tax (\$2 per month for every customer) yields an annual revenue of about \$36 million. The new consumer surplus falls by about \$80 million to \$875 million per year and producer surplus falls about \$20 million to \$250 million. The net \$64 million drop in social surplus is the deadweight loss and it amounts to more than 180% of the revenue raised by the tax. This large efficiency cost arises because of the large elasticity of demand at equilibrium prices.

households per survey respondent (about 1220 on average).

5. Fixed Costs and Adjusting the Tax Analysis to Account for Technology Diffusion

This was not a conventional market, however. It was a rapidly growing one where most communities did not yet have access. With fixed costs of entering a market the conventional approach can miss a great deal. Looking at the producer surpluses in table 1, it is clear that they vary greatly across locations depending on the elasticity of demand and the size of the market. The largest potential producer surplus—New York City with \$23.2 million—is much larger than the median market's producer surplus, for example, of only about \$2.5 million. With fixed costs of entering a market, the chances the cable company will wait to rollout service until demand grows further are high. At the time of the sample more than 90% of markets with producer surplus in the top 20 had access to broadband while less than 30% of markets ranked 50 and below did.⁹ This is certainly suggestive evidence that fixed costs played an important role in the diffusion of the product. If the fixed costs were only at the neighborhood level, for example, then the diffusion pattern would tend to be small roll outs into the high-income, highly educated neighborhoods in all markets rather than more extensive rollouts in large markets and no service in the small ones.

A. Estimating the Size of the Fixed Cost

To estimate the fixed cost of serving a market, table 2 lists the results from

⁹ I restrict the sample to the top 69 metro areas so as to have enough observations to estimate the demand curves in each one and because in these markets almost none of the population lacks access to cable the way some people do in very rural areas. The principle holds even more so in the markets below this top 69 group, however, since virtually none of them had access to broadband at the time of the sample.

probit regressions of whether the metro area had access to cable modems at the time of the survey as a function of the producer surplus. This treats the entry as a binary variable at the market level for two reasons. First, the share of people with the service seem relatively similar across markets that have access so it seems like the size of entry must be fairly similar (relative to the overall market size). Second, the data do not allow more detailed geographic analysis of the entry. With this in mind, there were a few metro area where cable modems were available in only one small neighborhood or as part of a limited pilot program—i.e., not generally of the same size as the more general entry locations. I do not count these as entry in the Probit because in such circumstances the provider would not yet have incurred the major city-wide fixed costs mentioned above.

The cable modem providers were, effectively, monopoly providers of residential broadband (recall that DSL was hardly available in any location at the time) so the regression will, arguably, not require adjustments for strategic behavior as in Bresnahan and Reiss (1990; 1994) or Berry (1994). A direct measure of the fixed cost of entering the market can be computed by just dividing the constant term by the coefficient on producer surplus (since it is a cost, it is a negative number). This measure gives the dollar value of producer surplus past which the probit index is greater than zero. In other words, it indicates how high the annual producer surplus needs to be in a market before they are predicted to have broadband. The first column uses only the measure of consumer surplus and the constant term in the regression. The imputation predicts about 75 percent of markets correctly (about 5 percent of the time a market did not have access when the model predicted it would and 20 percent of the time a market had access but

was predicted not to). The value of the fixed cost here is the same in every market. It suggests that entry does not occur until the annual producer surplus exceeds about \$3.4 million per year.¹⁰ This would correspond to a fixed cost of about \$16.4 million in NPV terms at the discount rate and customer life discussed above. So a market needed to generate as much surplus as somewhere like Pittsburgh, Pennsylvania or Austin, Texas to warrant entry in 1998.

Columns 2 and 3 of the table allow a more nuanced estimate of the fixed costs by allowing for reasonable variation in costs across locations. Column 2 recognizes that higher population density could reduce the costs of rolling out broadband in a market and could reduce the fixed cost of entry. By adding population density (as measured by Census Bureau, 1996) to the regression, the specification asks what level of producer surplus is needed to justify entry but allows the level to be lower if the market is highly concentrated. In the data, however, the density variable itself is completely insignificant, small, and of the wrong sign. Column 3 repeats the same exercise but uses the growth rate of population in the metro area in the preceding decade, since a location with the same current producer surplus but a higher growth rate of population might lead the cable company to incur the fixed cost and enter the market. Here the variable is the correct sign and is of more consequence but the coefficient is only borderline significant. That said, this does generate a range of implied fixed costs across markets. They range

¹⁰ Of course the absolute value of the fixed cost depends on the assumptions in the NPV of revenue calculation. The calculation of which cities are on the margin, however, and the additional DWL in those cities relative to the conventional will not be affected by that choice because they are computed as a share of revenue. Changing the NPV assumptions will adjust the implied producer surplus, implied fixed cost and future tax revenue by the same proportion.

from cities needing current annual producer surplus of only \$2.1 million to warrant entry in markets at the 90th percentile of population growth to almost \$5 million at the 10th percentile. Whether one uses the fixed costs from column 1 or column 3 will not change the results, as demonstrated below. I also tried variables that might influence the demand or cost of upgrading the cable lines such as the mean education in the market or the share of people in the market who subscribe to satellite television. More education is typically associated with faster adoption rates for new technology (Goolsbee and Klenow, 2002). Competition from Direct Broadcast Satellite services like DirecTV, which are digital and have very high picture quality, was viewed by many as forcing the most threatened cable systems to upgrade their networks irrespective of the demand for broadband (see the discussion in Goolsbee and Petrin, 2004). When a company upgrades its system, it is much cheaper to provide broadband service as an additional feature. Neither of these factors had any significant effect on the observed deployment rates, however. The results indicate that there is somewhat robust evidence that there some important fixed costs facing the providers of residential broadband.

B. Computing the Actual DeadweightLoss from Taxing New Technology

If the fixed cost of entry to a market is the size indicated above, the standard analysis of taxation will be highly misleading. The conventional analysis of taxation is only accurate in markets where producer surplus after taxes is sufficient to cover the fixed cost (or in places where they have already entered).¹¹ These markets together

¹¹ Though the producers must now subtract off the fixed cost of entry in each market when

account for about 46% of the U.S. population. Similarly, there is no problem in the smallest markets since the tax on broadband access has no effect of any kind in places where entry would not occur regardless of the tax rate.

In the middle markets, however, the impact of taxes on diffusion makes a big difference. In these estimates, there were four market where the producer surplus with no tax on access would warrant entry but the surplus with a tax on access would not warrant entry. These were Miami, Cleveland, Tampa, and Milwaukee. If the government had put a tax on broadband (and did so before diffusion took place) the firms would delay entering. In the interim, all of the consumer surplus and producer surplus (but minus the fixed cost of entry) in these markets will become deadweight loss from the tax.¹²

At least in this case, that adjustment makes a big difference. In the 19 markets served both before and after the imposition of the tax (where the conventional tax analysis is completely correct), the sum total of DWL from the tax is \$43 million per year and the revenue is \$23 million per year. In just the four markets where entry is delayed because of the tax, however, the DWL arising from lost consumer surplus is \$56 million—greater than the DWL in the 19 'normal' markets combined. The lost producer surplus (minus the fixed costs) adds an additional DWL of \$14 million. Thus the deadweight loss adjustment associated with the impact of taxes on diffusion, \$70 million, exceeds the conventional deadweight loss by a factor of 2 (raising the total DWL from

computing their total profit, of course.

¹² This is similar to the argument made in Faulhaber and Hogendorn (2000) and Owen and Rosston (1998) that forcing universal access to cable modems could slow deployment in medium

around 180 percent of revenue to 434 percent of revenue).

This finding of dramatically higher DWL from taxation is robust to how one defines the marginal markets. Above, the analysis relied on the hard {0,1} entry cutoff and counted only four markets as being delayed for certain and the ones above the threshold as having broadband for certain. Using, instead, the continuous variable of the predicted probability of entry from the Probit regression and recomputing the DWL and revenue for each market and summing across markets, weighting by that probability before and after the imposition of a tax, the total DWL as a share of revenue was even higher at 515%. Accounting for the fact that some markets might be growing faster than others and might induce entry even if the 1998 level seemed insufficient by using the results from the modified entry probits and repeating the same analysis yielded a smaller (but still dramatically larger than in a conventional analysis) DWL of 346% of revenue.

C. The Actual Incidence of Taxing Broadband

The conventional analysis does not just understate the DWL of taxing new goods. In terms of incidence, it also significantly understates the share of the tax ultimately borne by consumers. Typically, the share of the tax borne by consumers is calculated by comparing the pre-tax to the post-tax consumer price. This will completely miss the problem arising in the bypassed markets. In those places, consumers bear a large burden from taxation since they lose all of their consumer surplus even though the tax collects no revenue. They are invisible because the tax shuts the market down. This

sized markets.

will disproportionately hurt consumers because in the marginal markets, almost by definition, the suppliers were close to indifferent between entering and incurring the fixed cost and choosing not entering. The tax leads producers to lose a small amount by choosing to delay entry and forgoing the small net profit from the market but leads the customers to lose a great deal because of the lost consumer surplus.¹³

In the case of broadband, the overall burden of the tax calculated the conventional way shows that the average price before tax went from \$39.50 to \$40.60, suggesting that consumers pay about 55 percent of the \$2 tax. Accounting for the bypassed markets, however, the total burden of taxation on producers and consumers (equal to revenue paid *plus* the lost consumer and producer surplus minus fixed costs) is \$136 million on an annual basis. Of that \$136 million, 70 percent (\$93m) is borne by the consumers. The standard calculation understates the consumer share substantially because it disregards the large losses to consumers in the markets where entry gets delayed.¹⁴

6. Conclusion

This paper argues that the deadweight loss from taxing a new technology that has fixed costs associated with adoption can be much higher than taxing a conventional good because it can lead to a delay in adoption and a subsequent loss of consumer and

13 I am indebted to Don Fullerton for pointing out that this argument arises because the monopolist is not able to perfectly price discriminate. If the monopolist could do so, they would capture all the consumer surplus in the market and would, therefore, internalize the impact that their decision to bypass a market has on the small number of high valuation customers.

14 This also raises the possibility that a subsidy (negative tax) could generate an overall welfare

producer surplus. The paper uses empirical evidence on the market for broadband at an early stage of its development as an empirical illustration that the conventional DWL calculation of a tax can, in practice, understate efficiency losses from taxation by a factor of 2-3 and understate the share of the tax burden borne by consumers by 15 percentage points. Given the importance attached to new goods in recent work in industrial organization and macroeconomics, the findings in this paper suggest that taking into account the impact of taxes on innovation and technology may be fundamental for understanding the role of government policy in the new economy.

gain to society if it increased consumer surplus in markets where it induced entry by enough to outweigh the normal DWL. See Goolsbee (2002) for a discussion.

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FIGURE 1: TAXATION IN MONOPOLY MARKETS

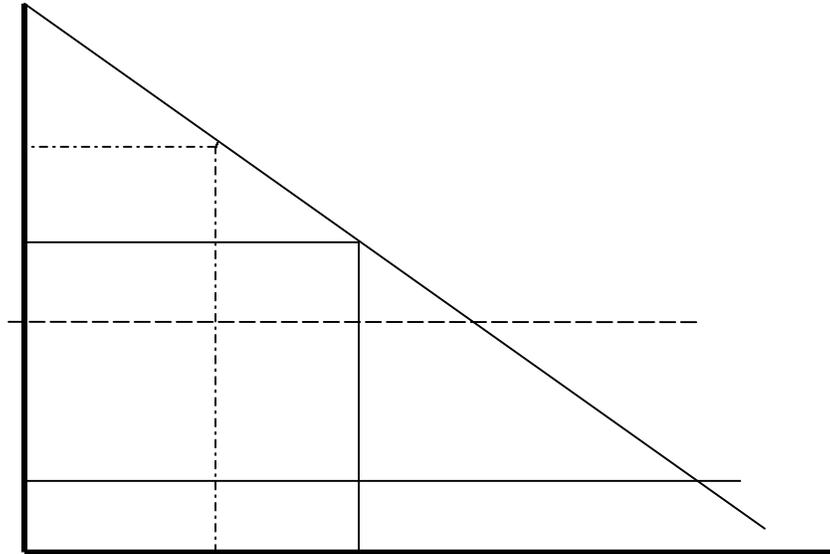
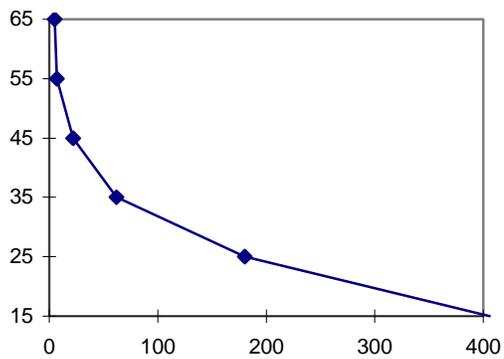


FIGURE 2: DEMAND CURVE FOR BROADBAND IN THE SAN FRANCISCO AREA



Source: Number of survey respondents who would buy broadband at a given price per month. Computed as detailed in the text.

Table 1: Demand and Surplus Estimates By Metro Area (in \$000s)

Metro Area	Elasticity (P=\$40/mo)	Annual PS	Annual CS
NYC	-2.82	22838	74348
LOSANGELES	-2.67	18531	59465
SANFRAN	-2.65	14745	47270
WASHDC	-2.61	13578	43293
CHICAGO	-2.59	12551	39899
PHILLY	-2.75	12182	39390
DALLAS	-2.59	10072	32047
BOSTON	-2.81	9231	30029
SEATTLE	-3.07	7761	25906
ATLANTA	-2.44	7180	22425
PHOENIX	-2.30	6803	20856
DETROIT	-2.87	6760	22155
HOUSTON	-2.60	6290	20040
SACRAMEN	-2.66	6290	20167
MINNEAPO	-3.04	5817	19337
DENVER	-2.50	5497	17292
SANDIEGO	-2.90	5182	17019
STLOUIS	-2.47	5064	15880
BALTIMORE	-2.82	4825	15693
MIAMI	-2.49	4320	13573
CLEVELAND	-2.96	4318	14250
MILWAUKEE	-2.54	4211	13315
TAMPA	-2.89	4200	13753
NASHVILLE	-2.64	3940	12604
PORTLAND	-2.74	3848	12403
RALEIGH	-2.44	3781	11826
PITTSBURGH	-3.68	3609	12660
AUSTIN	-2.30	3321	10201
COLUMBUS	-2.96	3174	10497
SALTLAKECITY	-2.99	3053	10100
CINCINNATI	-2.63	2868	9148
INDIANAPO	-3.45	2843	9783
ORLANDO	-2.90	2797	9159
NORFOLK	-3.01	2691	8910
HARTFORD	-2.31	2548	7816
BUFFALO	-3.08	2391	7972
WESTPALM	-2.78	2275	7389
ALBANY	-3.60	2260	7881
GRANDRAPIDS	-3.24	2097	7107
CHARLOTTE	-3.06	2064	6877
PROVIDENCE	-3.05	1980	6595
SANANTONIO	-2.64	1973	6303
DAYTON	-3.22	1961	6624
NEWORLEAN	-3.31	1908	6513
RICHMOND	-3.02	1875	6248
TOLEDO	-3.27	1801	6132
ALBUQUER	-2.71	1792	5774
KANSASCITY	-2.15	1792	5376
LANCASTER	-3.50	1659	5720

Source: Estimates from a quadratic demand curve for each market. These are the top 50 markets, the next 19 markets are excluded to conserve space but are included in the estimates. The elasticity is calculated at a price of \$40 per month. The producer and consumer surplus calculations are computed as described in the text.

TABLE 2: Does the Market Have Cable Modem Access in 1998

	(1)	(2)	(3)
Constant	-.8394 (.2623)	-.6011 (.3305)	-1.2024 (.3430)
Producer Surplus	.0120 (.0036)	.0148 (.0044)	.0116 (.0036)
Pop. Density		-.0008 (.0007)	
Population Growth Rate			.2603 (.1564)
n	69	69	69

Notes: The dependent variable in each Probit is whether or not the metro area had general access to broadband in 1998. The producer surplus is calculated as described in the text. The measures of population density and the population growth rate come from the U.S. Census. The implied fixed cost is calculated in NPV terms assuming a discount rate of 10% and a customer life of five years.

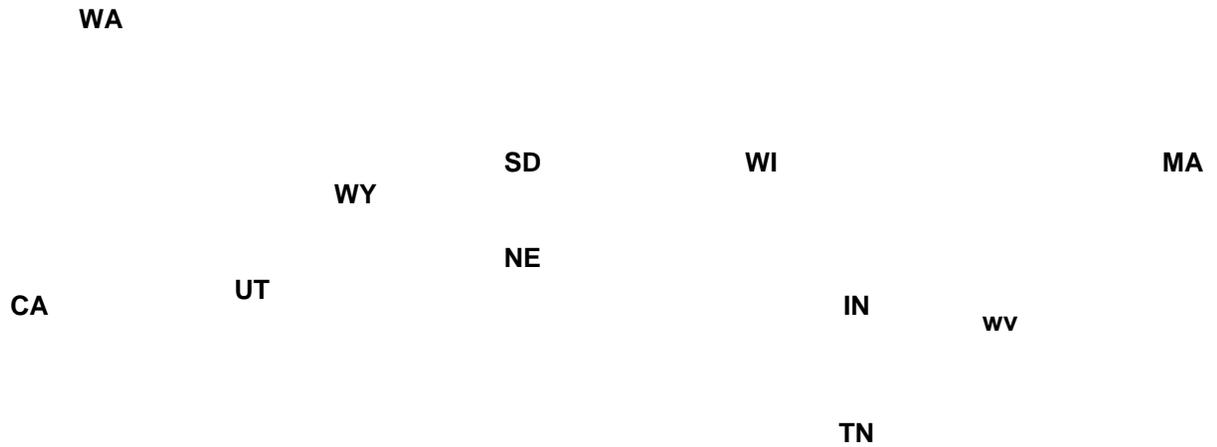
ATTACHMENT 5

Digital Goods Legislative Activity - 2007



NJ

Digital Goods Legislative Activity - 2008



State Digital Tax Legislation
Successfully Defeated in 2008

State Enacted Digital
Goods Tax in 2008

Digital Goods Legislative Activity - 2009



WA

WY

NV

WI

VT

NY MA

KY

WV

VA

NC

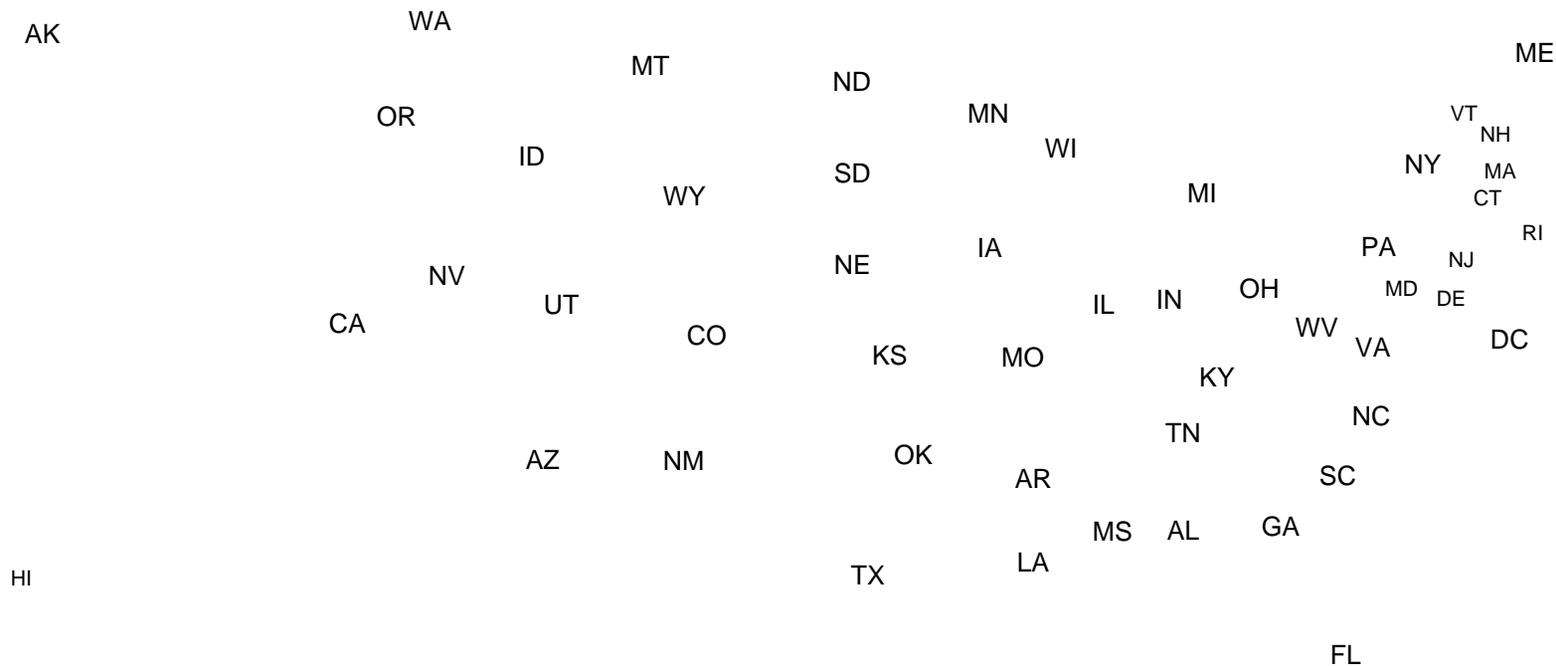
MS

FL

State Enacted Digital Goods Tax in 2009

State Digital Tax Legislation Successfully Defeated in 2009

A Snapshot of Digital Goods Taxability - 2009



Digital Goods Taxed by DOR
Position or Caselaw

Digital Goods
Non-Taxable

Digital Goods Taxed
by Statute