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Larry F. Darby

Joseph P. Fuhr Jr

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***INVESTING IN ECONOMIC GROWTH:
BROADBAND NETWORK TAX FORBEARANCE***

by

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 directly and indirectly destroy more value for taxpaying citizens than expenditure of the funds can reasonably be expected, or been analytically shown to create. Put differently, the paper inquires and answers whether broadband tax forbearance is a good government investment.

Private or public investment 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, when compared to other forms of taxation and/or expenditure plans, most likely will yield very attractive returns.

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. This includes streets, sewers, buildings, schools, medical facilities, sports facilities, and other projects. 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 the alternative, but foregone, private or public expenditures. Other considerations matter, but a major

* President, Darby Associates; Fellow, The American Consumer Institute, a 501(c)3 organization formed to advance an economics-based consumer welfare platform in information technology, communications and related matters.

** Professor of Economics, Widener University; Fellow, The American Consumer Institute.

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consideration in matters of public finance and expenditure is comparison of real costs and benefits.¹

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. The inclination among state and local fiscal authorities is to look to those services for added revenue to close budgetary gaps.

Because of 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 when compared to 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 sectors, in other economic activities, and in pursuit of other worthy public objectives including 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 both the supply and demand for broadband networks, by reducing funds available for investment and by

¹ JOSEPH E. STIGLITZ, *ECONOMICS OF THE PUBLIC SECTOR* 257 (W. W. Norton & Co. 2d ed. 1988) (“the government...needs to know whether a particular project [or tax] should be undertaken – whether the benefits exceed the costs”).

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 in the body of work characterizing the economic effects of taxing broadband there is no material dissent apparent, about 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!”²

Every sector of the economy has its idiosyncrasies, many of these are routinely cited by advocates of tax relief and preferences, and 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, as well as 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 governments 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 by fostering 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 socially beneficial 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.

²Dr. Larry Darby, *Don't Tax What You Want To Encourage*, The American Consumer Institute: Center for Citizen Research, Aug. 28, 2008, <http://www.theamericanconsumer.org>. (from the homepage go to Blogs tab; August 2008 hyperlink; follow the “Don’t Tax What You Want to Encourage” hyperlink) (last visited Nov. 4, 2008).

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 to set forth central features of the economic welfare-based implications of taxing, or not taxing, broadband services in particular and telecommunications services more generally. Further, we will set out a case for forbearance of broadband and telecommunications taxes more generally as a good government investment. Put simply, foregoing the temptation to tax broadband and associated telecommunications services today will stimulate growth in network investment, economic activity, income streams, and wealth, tomorrow. 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 also applies to the taxation of ordinary telecommunications or cable services, since broadband Internet services are provided over those general purpose networks that also provide (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 multi-service, 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 both a general 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 multi-service, multi-user facilities will also reduce the

overall incentives to invest in these networks. Taxes on plain old telephone voice services, ordinary cable entertainment services, or 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 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 (b) as a result of that expansion stimulate taxable economic activity and value in other sectors of the economy. This article 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."⁴ 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 Article

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

Section II provides perspective and context. It addresses (a) the ongoing debate over comparative development of the U.S. broadband sector vis-à-vis the rest of the world, (b) investor views of risks and returns in

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, both telcos and cable network providers provide voice, data, video, and Internet access services over the same network. Digital technology permits the provision of services that previously were provided over different networks or sub-networks over a single network. 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 not only in that locality, but also reduces cash available for network investment outside of it. Therefore, as discussed further below, state and local taxes, as well as state and local tax forbearance, will have an "external" impact. *Infra*.

⁴ Editorial, *The Master of the Maze*, TIME MAGAZINE, Nov. 07, 1977, available at <http://www.time.com/time/magazine/article/0,9171,947943,00.html> (last visited Nov. 4, 2008).

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 and the 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 specifically on markets for broadband network services. They 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 macro-economy 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 metric economic performances. 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 most 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.⁵ State, and local level, fiscal authorities are coming to grips with

⁵ See THE NAT’L GOV. ASS’N AND NAT’L ASS’N OF BUDGET OFFICERS, THE FISCAL SURVEY OF THE STATES (2007). See also NAT’L COUNCIL OF STATE LEGISLATURES, NEXUS IN THE

budget realities created by spending plans based on optimistic projections of receipts based on past growth trends; affected by 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.

During the writing of this article 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.⁶ 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.⁷ However, a fair and complete assessment of the merits of alternative fiscal approaches, and in particular, those that implicate communications networks must be much broader. The most notable of these forces and circumstances are discussed below.

A. U.S. Broadband Performance

There is a striking consensus on the importance of the development of broadband networks to the U.S. economy. The Chairman of the Federal Communications Commission ("FCC"), Kevin J. Martin, 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

NEW ECONOMY: ENSURING A LEVEL PLAYING FIELD FOR ALL COMMERCE (2006) (addressing problems created by online sales, but also state fiscal challenges more generally), *available at* <http://www.ncsl.org/programs/fiscal/nexusneweconomy.html> (last visited Nov. 4, 2008).

⁶ 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 change its principal perspectives or conclusions.

⁷ 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. See Sinead Crew & John Wallace, *U.S. Telecom Growth Seen Slower Than Global Industry*, REUTERS, Feb. 22, 2008, *available at* <http://www.reuters.com/article/technologyNews/idUSN2255854420080222?pageNumber=1&virtualBrandChannel=10003> (last visited Nov. 4, 2008).

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.⁸

The importance of broadband technology and different approaches to encouraging its development has provoked debate over the performance of U.S. *broadband* markets..⁹ Not surprisingly, there is spirited disagreement over how 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 developed nations. 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 United States fifteenth in subscribers per capita among thirty

⁸ FEDERAL COMMUNICATIONS COMMISSION, HIGH-SPEED SERVICES FOR INTERNET ACCESS STATUS AS OF JUNE 30, 2007 INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION WIRELINE COMPETITION BUREAU 42 (March 2008), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-280906A1.pdf (last visited Nov. 4, 2008).

⁹ 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 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. *See* BEFORE THE FEDERAL COMMUNICATIONS COMMISSION, IN THE MATTER OF 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 FIFTH REPORT 2 (June 2008), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-88A1.pdf (last visited Nov. 6, 2008).

OECD nations.¹⁰ Based on the OECD methods and data, the United States fares only slightly better using a broader composite average of share of households subscribing to broadband, average broadband speed, and broadband prices.¹¹ Critics allege a series of shortcomings in terms of speed and pricing. They aver that Iceland's broadband subscription rate is more than 50% above the U.S.; that the U.S. pays about nine times more per megabit of throughput than South Koreans; and, that average speeds in Japan are twenty times faster than in the United States.¹²

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 that "...[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."¹³

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 U.S. broadband performance is offered in the context of critiques of U.S. policies and, more particularly, by regulation or the lack thereof by the FCC. The debate is fueled by policy differences between those who favor more government intervention in broadband markets and those who caution against

¹⁰ See Robert D. Atkinson, *The Case For a National Broadband Policy*, THE INFORMATION TECHNOLOGY AND INNOVATION FOUNDATION, June 2007, at 1.

¹¹ See *Id.* at 2.

¹² See *Id.* (note that these assertions are fiercely contested and are solely the critics' perceptions and claims about our global rank).

¹³ Scott Wallsten, *Understanding International Broadband Comparisons*, TECHNOLOGY POLICY INSTITUTE, May 2008, at 3, available at

http://techpolicyinstitute.org/files/wallsten_international_broadband_comparisons.pdf (last visited Nov. 4, 2008). Wallsten 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 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.

the unintended, unanticipated consequences of more activist regulation of broadband network service providers.¹⁴

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, and more widely available to subscribers. They agree that we can and should do better. The dispute over rankings is important mainly in the context of spillover discussions about the best way to accelerate broadband development. 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 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.¹⁵ Capital costs are compounded by uncertain returns associated with the investment and consequent risk premia assigned to debt and equity securities backing the investments. Contrast this to the days of yore, when telecommunications network investments were made in a noncompetitive environment for provision of quasi-monopoly services protected from competition.¹⁶

¹⁴ See Robert D. Atkinson, Daniel K. Correa & Julie Hedlund, *Explaining International Broadband Leadership*, THE INFORMATION & INNOVATION FOUNDATION, May 2008, at 1, available at <http://www.itif.org/files/2008BBExecutiveSummary.pdf>. (last visited Nov. 4, 2008). Atkinson explains that “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.” See also, Daniel K. Correa, *Assessing Broadband in America: OECD and ITIF Rankings*, THE INFORMATION TECHNOLOGY AND INNOVATION FOUNDATION, April 2007, available at <http://www.itif.org/files/BroadbandRankings.pdf> (last visited Nov. 4, 2008). See also, McCain, *Obama Advisors Discuss Candidates Tech Policy Stances*, TELECOMMUNICATIONS REPORTS DAILY, July 15, 2008.

¹⁵ For a good tutorial on these costs, their main drivers and determinants of investment returns, see *Cost and Profitability Drivers for Fiber to the Home*, LAST MILE (Benjamin Media, Peninsula, OH) July 2005 at 1-2, available at <http://www.corning.com/docs/opticalfiber/r6324.pdf> (last visited Nov. 4, 2008).

¹⁶ This quasi-monopoly environment, incidentally, was the context for continuing practice of singling out communications networks for special (higher) taxation. See *infra* Section III.

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/home.aspx>

Unlike traditional monopolies, like the utility companies, profits and cost recovery for broadband are by no means assured. Telephone 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 a standalone basis and “broadband investment” per se are not available, for a variety of reasons they are likely to be below the returns on invested capital, equity and assets reported above for Comcast, Time Warner, AT&T and Verizon.¹⁷ Returns for selected applications and content provided by firms that use broadband infrastructures, like Google and Amazon, 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. 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.

¹⁷ The main reason for probable lower incremental returns on broadband investment than on legacy services (voice, cable television, data, etc.) is that broadband services have a lower adoption rate than legacy services. That means the burden of initial, sunk investment costs for broadband must be spread over, and borne by, fewer subscribers. For details of the investment cost relationship to density and number of subscribers. See Larry F. Darby, *Consumer Welfare, Capital Formation and Net Neutrality: Paying for Next Generation Broadband Networks*, 16 MEDIA L. & POL'Y 137-55 (2007), available at <http://www.theamericanconsumer.org/2006/06/06/consumer-welfare-capital-formation-and-net-neutrality-paying-for-next-generation-broadband-networks> (last visited Nov. 4, 2008).

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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 U.S. Senate Communications Subcommittee hearings on the role of government in markets for broadband services.¹⁸

- 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."¹⁹
- 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."²⁰
- 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 on network upgrades to roll out digital TV and high-speed-Internet access.²¹

Other, similar, concerns have recently been expressed:

- "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."²²

¹⁸ *Hearing on Wall Street's Perspective on Telecommunications Before the Subcomm. On Senate Commerce and the Science and Transportation Comm.*, 109th Cong. (2006).

¹⁹ Ted Hearn, *Analysis Question Bell Investments*, Multichannel News, Mar 14, 2006, available at <http://www.multichannel.com/article/CA6316081.html?display=Breaking+News> (last visited Nov. 4, 2008).

²⁰ *Hearing on Wall Street's Perspective on Telecommunications Before the Subcomm. On Senate Commerce and the Science and Transportation Comm.*, *supra* (Statement of Luke Szymczak, Vice-President of J.P. Morgan Asset Management).

²¹ "In the mid-to late-'90s the cable industry deployed approximately \$90 billion of capital in order to materially upgrade its network capacity to better position the industry to offer advanced digital video services, interactivity and other applications... Changes are occurring at such a frenetic pace that any possible regulation today carries a risk of stunting this innovation if it does not build in enough flexibility for the complexion of the sector in the coming years, if not months." *Id.* (Statement of Aryeh Bourkoff, managing director of media for Cable & Satellite Entertainment Equity & Fixed Income).

²² CRAIG MOFFETT, *THE COUCH POTATO WARS: ASSESSING THE IMPACT OF BELL ENTRY INTO THE CONSUMER MULTICHANNEL VIDEO MARKET* 82 (Bernstein Research 2005).

- 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."²³

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 for very different reasons.

According to Bernstein,²⁴ a highly regarded Wall Street research firm: "There is little doubt that Verizon's FiOS is a terrific product...*for consumers*."²⁵ In sharp contrast to consumer complaints about cable services, FiOS has drawn rave reviews from consumers and consumer advocates. Consumer Reports recently granted FiOS its first "perfect" score for a video or broadband provider.²⁶ That is the good news. The not so good news, as suggested, is that the broadband market is competitive, broadband investment is risky, and returns to investors are uncertain.

Also, 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 – 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

²³ *ACI Net Neutrality Study*, *supra* note 16.

²⁴ <https://www.bernsteinresearch.com> (last visited Nov. 6, 2008).

²⁵ CRAIG MOFFETT ET AL., VERIZON (VZ): PROJECT FIOS...GREAT FOR CONSUMERS, BUT WHAT ABOUT INVESTORS? (Bernstein Research 2008) (emphasis added).

²⁶ *Id.*

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services are mixed, but nobody suggests that such networks can be taxed without regard to the 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.²⁷

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 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.²⁸ In Montana, the Department of Revenue is arguing that wireless infrastructure should be reclassified as “utility” property and subject to higher property tax burdens.²⁹

²⁷ *Exemption from the sales tax for certain telecommunications equipment: Hearing on HB 2787 Before the H. Comm. On Ways and Means*, 2007 Leg., 80th Sess. 2 (Tex. 2007) (statement of Scott Mackey, Partner, Kimbell, Sherman, and Ellis LLP).

²⁸ Private communication to authors from Mr. Scott Mackey, Partner, Kimbell, Sherman, and Ellis LLP, www.ksefocus.com.

²⁹ *Id.*

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.³⁰ In some cities the rate for cable subscribers exceeds 20%; the rate for telecom subscribers often exceeds 25% and reaches more than 30% in some U.S. cities; and, the rate for wireless services is frequently above 15% and has reached more than 20% in one city.³¹ 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 beer in numerous U.S. cities. In Chicago and Los Angeles taxes and fees on wireline phone service exceed taxes on beer, liquor and tobacco.³²

D. Telecommunications Taxes Are Regressive

Telecom taxes hit poor people harder than wealthier citizens. This is because taxes on transactions 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

³⁰ David Turek, Paul Bachman, Steven Titch and John Rutledge, *Taxes and Fees on Communication Services*, THE HEARTLAND INSTITUTE, June 2007, at 3, 41, available at http://www.heartland.org/custom/semmod_policybot/pdf/21104.pdf.

³¹ *Id.* at 8, 10, 12, 20.

³² *Id.* at 3.

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the country (\$24,780) and paid the average amount in communication taxes and fees (\$247.08) shouldered a tax and fee burden of about 1.0%. 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%, 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%, about one-tenth the rate paid by low-income households.³³

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.³⁴ 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 Techno-economic Change

There are several reasons why traditional telecommunications tax principles and practices do not fit current realities. Perhaps the most important one is the current inapplicability of the historic status of telephone and cable systems as regulated monopoly utilities. As such, cable and telecom companies were regarded as “quasi-public,” “common carrier-type” businesses “affected with a public interest”. Over the years a “social contract” evolved 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.³⁵

³³ *Id.* at 22.

³⁴ Patrick Devlin, *Commentary: Baltimore City, Montgomery County lawmakers need a new piggy bank*, THE DAILY RECORD, March 25, 2005, available at http://findarticles.com/p/articles/mi_qn4183/is_ai_n14589701 (last visited Nov. 6, 2008).

³⁵ 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 *infra* note 40.

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.³⁶

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. 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."³⁷ Similar positions have been adopted in Europe, where the European Commission has concluded: "...widespread and affordable broadband access is essential to realize the potential of the Information Society."³⁸ An Australian government report concluded that "ubiquitous, multi-megabit broadband will underpin Australia's future economic and social prosperity."³⁹ The Japanese have joined with regional

³⁶ See *infra* Section V.

³⁷ Promoting Innovation and Economic Security Through Broadband Technology, http://www.whitehouse.gov/infocus/technology/economic_policy200404/chap4.html (last visited Nov. 6, 2008).

³⁸ European Commission's Information Society, http://ec.europa.eu/information_society/eeurope/2005/all_about/broadband/index_en.htm (last visited Nov. 9, 2008)

³⁹ Australian Government Department of Communications, Information Technology and The Arts, http://www.archive.dcita.gov.au/2007/12/broadband_blueprint/broadband_blueprint_html_version/chapter_one_broadband_as_critical_infrastructure (last visited Nov. 9, 2008).

partners to "enable all people in Asia to gain access to broadband platforms..." by 2010.⁴⁰ 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).⁴¹

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.⁴²

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.⁴³ There are various federal programs to stimulate broadband technology. The largest is the Federal Universal Service Fund administered under provisions in the Telecommunications Act of 1996.⁴⁴ That fund collected \$7.3 billion in 2006, and a total of \$ 21.9 billion during the 1998-2006 timeframe, from interstate service providers. The money was then disbursed mainly to high cost providers and to schools and libraries. Not all of this was in direct support of broadband, but owing to changing technology and the needs of applicants to the USF, a substantial and growing share of it is fairly denominated as a "government administered subsidy to broadband."⁴⁵

⁴⁰ Asia Broadband Program, <http://www.dosite.jp/asia-bb/en/pdf/abp005.pdf> (last visited Nov. 9, 2008).

⁴¹ International Telecommunications Union, <http://www.itu.int/net/ITU-D/index.aspx> (last visited Nov. 9, 2008).

⁴² Scott Wallsten, *Broadband Penetration: An Empirical Analysis of State and Federal Policies*. 19 (AEI-Brookings Joint Center for Regulatory Studies, Working Paper No. 05-12, 2005), available at

<http://aei-brookings.org/admin/authorpdfs/redirect-safely.php?fname=../pdffiles/phpFc.pdf> (last visited Nov. 8, 2008).

⁴³ Sonia Arrison, Dr. Ronald Rizzuto & Vince Vasquez, *WiFi Waste: The Disaster of Municipal Communications Network*, PACIFIC RESEARCH INSTITUTE, February 1, 2007 at 1.

⁴⁴ Pub. L. No. 104-104, 110 Stat. 56 (1996).

⁴⁵ For a general description and details of the Universal Service Fund administered by the Universal Service Administrative Company (USAC), see

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 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 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 decision-maker, but if the decision-maker’s costs or benefits diverge from those of the public then 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.⁴⁶

<http://www.usac.org/about/universal-service/fund-facts/fund-facts.aspx> (last visited Nov. 6, 2008).

⁴⁶ 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 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*

Broadband networks generate at least two distinguishable kinds of externalities: (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 each incremental user creates value for her and for the other million subscribers who now benefit from her presence.⁴⁷ 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, 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.⁴⁸ 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.

It is notable that many of these inter-sectoral 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 a broadband connection lowers

Riders Tax Ordinary Internet Subscribers, CONSUMERGRAM OF THE AMERICAN CONSUMER INSTITUTE, April 30, 2008. See also 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/> (last visited Nov. 6, 2008).

⁴⁷ 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, 2001).

⁴⁸ See *infra* Section V.

transportation 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, online retail firms enabled by network connections in all parts of the country concentrate benefits in one or a cluster of locations, allowing firms to access buyers without being geographically close 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 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 should be a national framework for establishing telecom tax structures as a means of avoiding national distortions from excessive and inconsistent state and local taxation.⁴⁹

III BROADBAND TAXATION

A. Taxes and Access to Broadband Communications

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

⁴⁹ 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 representatives of the state and local government and the communications industry 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 EC-15 *available at* <http://www.nga.org/portal/site/nga/menuitem.8358ec82f5b198d18a278110501010a0/?vgnextoid=7de82ad998254010VgnVCM1000001a01010aRCRD>.

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.⁵⁰ 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 telecom 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.⁵¹ 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.⁵² 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,⁵³ 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 from the economic activity stimulated and made more efficient by the expansion of tax-shielded networks and services.

⁵⁰ *What Is Broadband?*, FCC, <http://www.fcc.gov/cgb/broadband.html>.

⁵¹ Internet Tax Freedom Act, Pub. L. No. 105-277, 112 Stat. 2681-719 (1998).

⁵² For a good sense of the context of the extension and a discussion of its broad support see, Jim Puzzanghera, *Congress approves Internet-tax moratorium*, L.A. TIMES, Oct. 31, 2007, at C-1, *available at* <http://articles.latimes.com/2007/oct/31/business/fi-nettax31> (last visited Nov. 10, 2008).

⁵³ 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. Stakes and Stakeholders: 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. This has several effects.

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.⁵⁴

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

⁵⁴ 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 eBay, 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.

processes in the rest of the economy. Hybrid appellations like “e-Commerce”, “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.”⁵⁵ 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.⁵⁶

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.⁵⁷

⁵⁵ ROBERT D. ATKINSON & ANDREW S. MCKAY, DIGITAL PROSPERITY: UNDERSTANDING THE ECONOMIC BENEFITS OF THE TECHNOLOGY REVOLUTION (The Info. & Innovation Found., 2007), http://www.itif.org/files/digital_prosperity.pdf (last visited Nov. 10, 2008).

⁵⁶ *Id.*

⁵⁷ 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, SHARON E. GILLET ET AL., MEASURING BROADBAND’S ECONOMIC IMPACT (U.S. Dep’t of Com., Econ. Dev. Admin.) (2006), http://www.eda.gov/ImageCache/EDAPublic/documents/pdfdocs2006/mitcmubbimpactreport_2epdf/v1/mitcmubbimpactreport.pdf (last visited Nov. 10, 2008).

C. Contributions of Wireless Platforms and Services

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 speed and functionality for wireless platforms. Wireless broadband penetration among enterprise users is currently less than a third the rate for wireless voice services used by business, but broadband growth in enterprises will grow dramatically in the next decade.⁵⁸

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 wireless broadband environment.

Ovum reviewed job classification data from the U.S. Department of Commerce's Bureau of Labor Statistics ("BLS"). 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.⁵⁹ 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.⁶⁰

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 U.S. economy that are truly staggering: "The overall increased efficiencies resulting from the use

⁵⁸ 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 (CTIA – The Wireless Assn.) (2008), http://files.ctia.org/pdf/Final_OvumEconomicImpact_Report_5_21_08.pdf (last visited Nov. 10, 2008).

⁵⁹ *Id.*, at 6.

⁶⁰ *Id.*, at 7.

of wireless broadband applications can be expected to yield savings of over \$528 billion during the 2005-2016 time period.”⁶¹

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 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.⁶²

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.

⁶¹ *Id.*, at 4, Figure 1.

⁶² *Id.*, at 6.

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.

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.

F. 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.⁶³

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.

⁶³ STEPHEN J. ENTIN, TAX INCIDENCE, TAX BURDEN, AND TAX SHIFTING: WHO REALLY PAYS THE TAX? 1 (The Heritage Found. Ctr. for Data Analysis Rep. #04-12) (2004), <http://www.heritage.org/research/taxes/cda04-12.cfm> (last visited Nov. 10, 2008).

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.⁶⁴

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 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.⁶⁵
- “...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.”⁶⁶

⁶⁴ See JOSEPH E. STIGLITZ, *ECONOMICS OF THE PUBLIC SECTOR* (W. W. Norton and Co. 2nd Ed. 1988) (1986) 411-433 (discussing the standard economic approach).

⁶⁵ Jerry Hausman, *Efficiency Effects on the U.S. Economy from Wireless Taxation* (Nat’l Bd. of Econ. Res., Working Paper No. 7281, 1999), <http://papers.nber.org/papers/w7281> (last visited Nov. 10, 2008) (arguing that 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.”); See also Scott Mackey, *The Excess State and Local Tax Burden on Wireless Telecommunications Service*, 33 ST. TAX NOTES, (2004), available at <http://ssrn.com/abstract=564461> (last visited Nov. 10, 2008) (containing copious reference notes and citations to other studies).

⁶⁶ Joseph J. Cordes, Charlene Kalenkoski & Harry S. Watson, *The Tangled Web of Taxing Talk: Telecommunications Taxes in the New Millennium, Progress on Point: Periodic Commentaries on the Policy Debate*, THE PROGRESS AND FREEDOM FOUND., Sept. 2000, <http://www.pff.org/issues-pubs/pops/pop7.12tangledweb.pdf> (last visited Nov. 10, 2008).

- 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.⁶⁷

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.⁶⁸ Also, long run price elasticity of demand is greater than short run price elasticity of demand. Secondly, as we state repeatedly, the 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 10% 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.⁶⁹
- 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.⁷⁰

⁶⁷ J. GREGORY SIDAK, IS STATE TAXATION OF THE WIRELESS INDUSTRY COUNTERPRODUCTIVE (Criterion Econ., L.L.C.) (2003), http://www.criterioneconomics.com/docs/sidak_pacific_research.pdf (last visited Nov. 10, 2008).

⁶⁸ See *supra* note 47 at 34-36 (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).

⁶⁹ *Id.* at 38.

⁷⁰ J. Gregory Sidak, *A Consumer-Welfare Approach to Network Neutrality Regulation of the Internet*, 2 J. OF COMPETITION LAW & ECON. 349 (2006).

- A tax of \$2 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% would be borne by consumers and the remainder reflected in reduced funds available to producers for investment.⁷¹

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 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 10% 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 U.S., but they pay 6% of total telecommunications taxes.⁷²

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.”⁷³

⁷¹ Austan Goolsbee, *The Value of Broadband and the Deadweight Loss of Taxing New Technology*, 5 CONTRIBUTIONS TO ECON. ANALYSIS AND POL. ARTICLE 8 (2006), available at <http://www.bepress.com/bejeap/contributions/vol5/iss1/art8> (last visited Nov. 10, 2008).

⁷² JAMES PRIEGER, TERRI SEXTON & ANNETTE NELLEN, *THE TAXATION OF TELECOMMUNICATIONS IN CALIFORNIA IN THE INFORMATION AGE* 71 (Cal. Pol. Res. Ctr.) (2003).

⁷³ JOHN B. HERRIGAN & AARON SMITH, *DATA MEMO: HOME BROADBAND ADOPTION 2007* 4 (Pew Internet and Am. Life Project) (2007), available at http://www.pewinternet.org/pdfs/PIP_Broadband%202007.pdf (last visited Nov. 10, 2008).

V

EXPERT ASSESSMENTS OF BROADBAND TAXATION IMPACTS

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.⁷⁴ Fortunately, despite varied quantitative estimates, there is no disagreement on the presence of substantial positive impacts of tax forbearance.

A. Techno-economic 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

⁷⁴ For an in depth analysis of the literature identifying and estimating and otherwise characterizing the benefits of broadband and, by direct implication the costs of taxing it, *see*, ROBERT D. ATKINSON, THE CASE FOR A NATIONAL BROADBAND POLICY (Info. Tech. and Innovation Found.) (2007); Dale W. Jorgenson, *Information Technology and the U.S. Economy*, Presidential Address to the American Economic Association, in HARV. INST. OF ECON. RES., Jan. 2001, at 27; Kevin J. Stiroh, *Investing in Information Technology: Productivity Payoffs for U.S. Industries*, CURRENT ISSUES IN ECON. AND FIN., June 2001; Stephen D. Oliner & Daniel E. Sichel, *The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?*, J. OF ECON. PERSP., Fall 2000 at 3-22; ROBERT CRANDALL & CHARLES JACKSON, THE \$500 BILLION OPPORTUNITY: THE POTENTIAL ECONOMIC BENEFIT OF WIDESPREAD DIFFUSION OF BROADBAND INTERNET ACCESS, (Criterion Econ., L.L.C.) (2001); STEPHEN B. POCIASK, BUILDING A NATIONWIDE BROADBAND NETWORK: SPEEDING JOB GROWTH (TeleNomic Res., LLC) (2002), *available at* <http://www.newmillenniumresearch.org/event-02-25-2002/jobspaper.pdf> (last visited Nov. 10, 2008); ROBERT W. CRANDALL, CHARLES L. JACKSON & HAL J. SINGER, THE EFFECT OF UBIQUITOUS BROADBAND ADOPTION ON INVESTMENT, JOBS AND THE U.S. ECONOMY (Criterion Econ., L.L.C.) (2003), *available at* http://www.newmillenniumresearch.org/archive/bbstudyreport_091703.pdf (last visited Nov. 10, 2008); Michael Mandel, *The New Business Cycle*, BUS. WK, Mar. 31, 1997; THOMAS W. HAZLETT ET AL., SENDING THE RIGHT SIGNALS: PROMOTING COMPETITION THROUGH TELECOMMUNICATIONS REFORM, A Report to the U.S. Chamber of Com. (2004), <http://www.uschamber.com/portal/teleconsensus/041006telecommstudy.htm> (last visited Nov. 10, 2008). *See also*, THE ECONOMIC AND SOCIAL BENEFITS OF BROADBAND DEPLOYMENT (Telecomm. Industry Ass’n) (2003); WAYNE T. BROUGH, STATE ECONOMIES CAN BENEFIT FROM BROADBAND DEPLOYMENT (CSE Freedom Works Found.) (2003).

subsets of the information and technology sector. Some focus on technology platform (wire or wireless), industry sector (telephone, cable, satellite), type of network or location in the value chain (equipment, software, etc.) and 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 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.⁷⁵

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.⁷⁶ The relationships among taxes, investment, consumer welfare, and

⁷⁵ Robert W. Crandall, Robert E. Litan & William Lehr, *The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data*, ISSUES IN ECON. POL., July 2007, http://www.brookings.edu/papers/2007/06labor_crandall.aspx (last visited Nov. 10, 2008). See also SHARON E. GILLET ET AL., MEASURING BROADBAND'S ECONOMIC IMPACT (U.S. Dep't of Com., Econ. Dev. Admin.) (2006), http://www.eda.gov/ImageCache/EDAPublic/documents/pdfdocs2006/mitcmubbimpactreport_2epdf/v1/mitcmubbimpactreport.pdf (last visited Nov. 10, 2008); ROBERT CRANDALL & CHARLES JACKSON, THE \$500 BILLION OPPORTUNITY: THE POTENTIAL ECONOMIC BENEFIT OF WIDESPREAD DIFFUSION OF BROADBAND INTERNET ACCESS, (Criterion Econ., L.L.C.) (2001); ROBERT LITAN, GREAT EXPECTATIONS: POTENTIAL ECONOMIC BENEFITS TO THE NATION FROM ACCELERATED BROADBAND DEPLOYMENT TO OLDER AMERICANS AND AMERICANS WITH DISABILITIES (New Millenium Res. Council) (2005).

⁷⁶ 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

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 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.

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.

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 and 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 2000.⁷⁷
- "...broadband, acting through changes to consumers' shopping, commuting, home entertainment and health care habits, would contribute an extra \$500 billion in GDP by 2006."⁷⁸
- The New Millennium Research Council estimated that 1.2 million jobs were created from the construction and use of a nationwide broadband network.⁷⁹
- "...failure to improve broadband performance could *reduce* U.S. productivity growth by 1 percent per year or more."⁸⁰

⁷⁷ SHARON E. GILLET ET AL., MEASURING BROADBAND'S ECONOMIC IMPACT (U.S. Dep't of Com., Econ. Dev. Admin.) (2006), http://www.eda.gov/ImageCache/EDAPublic/documents/pdfdocs2006/mitcmubbimpactreport_2epdf/v1/mitcmubbimpactreport.pdf (last visited Nov. 10, 2008).

⁷⁸ *Id.*

⁷⁹ STEPHEN B. POCIASK, BUILDING A NATIONWIDE BROADBAND NETWORK: SPEEDING JOB GROWTH (TeleNomic Res., LLC) (2002), <http://www.newmillenniumresearch.org/event-02-25-2002/jobspaper.pdf> (last visited Nov. 10, 2008).

⁸⁰ CHARLES H. FERGUSON, THE U.S. BROADBAND PROBLEM (The Brookings Inst.) (2002), http://www.brookings.edu/papers/2002/07technology_ferguson.aspx (last visited Nov. 10, 2008).

- “...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’...”⁸¹
- “...employment in both manufacturing and service 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.”⁸²
- ICT added 1.18 percentage points to GDP growth and accounted for two-thirds 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% of the capital stock.⁸³
- Though ICT's contribution to growth is lower now than in the last half of the 1990s, it remains sizable. A recent study concludes that ICT contributed 59% of the growth in labor productivity from 1995 to 2000 and 33% from 2000 to 2005.⁸⁴
- About one-third of the per capita GDP growth (0.59 of the 1.96% per year growth rate) across twenty-one OECD countries from 1970 to 1990 has been attributed to telecommunications infrastructure investments.⁸⁵

⁸¹ Robert W. Crandall, Robert E. Litan & William Lehr, *The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data*, ISSUES IN ECON. POL., July 2007, http://www.brookings.edu/papers/2007/06labor_crandall.aspx (last visited Nov. 10, 2008)

⁸² *Id.*

⁸³ Dale W. Jorgenson, *Information Technology and the U.S. Economy*, 91 AM. ECON. REV. 1, 1-32 (Jan. 2001), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=257536 (last visited Nov. 10, 2008).

⁸⁴ DALE W. JORGENSEN, MUN S. HO & KEVIN J. STIROH, A RETROSPECTIVE LOOK AT THE U.S. PRODUCTIVITY GROWTH RESURGENCE (Fed. Res. Bd. of N.Y. Staff Rep. No. 277) (2007), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=970660 (last visited Nov. 10, 2008).

⁸⁵ Lars-Hendrik Roller & Leonard Waverman, *Telecommunications Infrastructure and Economic Development: A Simultaneous Approach*, 91 AM. ECON. REV. 755, 909-923 (2001).

- Telecom and broadband investments yield excessive returns compared to other forms of infrastructure.⁸⁶
- In developing countries, a 10% higher mobile phone penetration would result in a 0.59% higher GDP growth.⁸⁷
- Telecommunications infrastructure promotes intra-state growth in the productivity of individual service sectors.⁸⁸
- 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 sector, researchers found that Internet business solutions 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 would add 0.43 percentage points to future productivity growth through 2011.⁸⁹
- Canada's slower productivity growth, relative to the U.S. is in part attributable to its less intensive use of ICT. Analysts attribute 60% of the difference in Canada's slower labor productivity growth in 2003 to differences in ICT use and its attendant spillover benefits.⁹⁰
- Firm-level data suggest that firms that use ICT more intensively are more innovative and thereby generate larger spillover benefits and productivity gains.⁹¹

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

⁸⁶ Leonard Waverman, Meloria Meschi & Melvyn Fuss, *The Impact of Telecoms on Economic Growth in Developing Countries*, 2 VODAFONE POL. PAPER SERIES 1, 10-23 (2005).

⁸⁷ *Id.*

⁸⁸ Serdar Yilmaz & Mustafa Dinc, *Telecommunications and Regional Development: Evidence From the U.S. States*, 16 ECON. DEV. Q. 195, 211-228 (2002).

⁸⁹ HAL VARIAN, ROBERT E. LITAN, ANDREW ELDER & JAY SHUTTER, NET IMPACT STUDY: THE PROJECTED ECONOMIC BENEFITS OF THE INTERNET IN THE UNITED STATES, UNITED KINGDOM, FRANCE, AND GERMANY (2002), http://www.netimpactstudy.com/NetImpact_Study_Report.pdf (last visited Nov. 10, 2008).

⁹⁰ MELVYN FUSS & LEONARD WAVERMAN, CANADA'S PRODUCTIVITY DILEMMA: THE ROLE OF COMPUTERS AND TELECOM (2006).

⁹¹ Philipp Koellinger, *Impact of ICT on Corporate Performance, Productivity and Employment Dynamics*, E-BUSINESS W@TCH (Dec. 2006), http://www.ebusiness-watch.org/studies/special_topics/2006/documents/TR_2006_ICT-Impact_I.pdf (last visited Nov. 10, 2008).

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.⁹²

The macroeconomic benefits of broadband characterized above are not evenly distributed throughout the sectors and activities of our national economy. Instead 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 factor into 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, 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 appear in different ways: fuel savings; environmental preservation; more widely available professional services; services tailored to meet the particular needs of the elderly;

⁹² CRANDALL, LITAN & LEHR, *supra* note 78 at 3.

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."⁹³

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

At the time of this writing the macro-economy continues, through a variety of metrics, to display clear evidence of deepening economic recession.⁹⁴ Growth is negative, unemployment is rising, holiday sales are down dramatically, domestic investment is stagnant, and consumer confidence continues to diminish.⁹⁵ These and other signs of economic distress in the

⁹³ JOSEPH P. FUHR JR. & STEPHEN B. POCLASK, BROADBAND SERVICES: ECONOMIC AND ENVIRONMENTAL BENEFITS, The Am. Consumer Inst. (2007), *available at* http://www.internetinnovation.org/Portals/0/Documents/Final_Green_Benefits.pdf (last visited Nov. 10, 2008). The report summarizes 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."

⁹⁴ 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 Dec. 11, 2008 that: "The committee determined that the decline in economic activity in 2008 met the standard for a recession...", *Determination of the December 2007 Peak in Economic Activity*, National Bureau of Economic Research Business Cycle Dating Committee, <http://www.nber.org/cycles/dec2008.html>.

⁹⁵ Swiss Re Economic Research and Consulting, U.S. Economic Outlook, December 2008, 1-2, *available at* <http://www.swissre.com/resources/703367004c2ef3098842bd32638cee3c-USOutlook.pdf>.

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 also infecting 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.⁹⁶

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 macro-economy is sufficiently broad, deep and diverse that consideration of traditional efforts is being joined by consideration of a variety of what for want of 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.⁹⁷

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,

⁹⁶ 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 Dec. 15, 2008 See *The Financial Crisis*, WALL STREET JOURNAL, <http://online.wsj.com/public/page/wall-street-in-crisis.html>.

⁹⁷ 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, Oct. 21, 2008. See http://www.nera.com/image/PUB_Paulson_New_Playbook_10.22.08.pdf.

bridges, schools, and to incent energy efficiency enhancing measures.⁹⁸ 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.⁹⁹

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 contradictory and particularly so if the rapidly growing IT sector is targeted for increased taxation as seems to be the inclination in many jurisdictions.¹⁰⁰ 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 other programs designed to stimulate broadband network development.¹⁰¹ 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.¹⁰²

⁹⁸ 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, Nov. 25, 2008, available at http://online.wsj.com/article/SB122753584294452995.html?mod=googlenews_wsj.

⁹⁹ Corey Boles and Fawn Johnson, *Stimulus Plan to Include Internet-Access Funds*, WALL STREET JOURNAL, Dec. 2, 2008 <http://online.wsj.com/article/SB122825292368073455.html>.

¹⁰⁰ 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.)

¹⁰¹ See Section II. F above.

¹⁰² 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.

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, education, 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 the use of funds that would have otherwise 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, and even though there are 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 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 at present, 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.

