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Wireless Taxation, Economic Growth and Economic Opportunity

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Mr. Chairman, Mr. Franks, and members of the Committee, I appreciate the opportunity to appear before you today to discuss the impact of discriminatory taxes on wireless telecommunications services on economic growth and opportunity.

I am president of the Information Technology and Innovation Foundation. ITIF is a nonpartisan research and educational institute whose mission is to formulate and promote public policies to advance technological innovation and productivity. Recognizing the vital role of technology in ensuring American prosperity, ITIF focuses on innovation, productivity, and digital economy issues. I have studied and written extensively about the issues of information technology and broadband and their effects on economic growth and societal improvement.

Importance of Wireless Communications

In the last 15 years, the U.S. economy has been transformed by information and communications technology (IT), including wireless communications. One result has been a significant increase in U.S. economic productivity, with most economists agreeing that the increase was due to the IT revolution.[1] And as a key component of the IT revolution, wireless technologies have contributed to that growth.

Moreover, innovation in the IT industry is continuing, with changes in the wireless industry being among the most rapid. The development of the Apple iPhone, and the introduction of similar offerings by competing cell phone manufacturers, is but the most recent and visible manifestation of this flourishing of innovation. Increasingly businesses are using wireless technology to become more productive and innovative, with everything from tracking inventory, to monitoring the performance of their business on a real-time basis, to enabling mobile workers to be connected. Consumers are using wireless for an increasingly diverse and novel range of purposes, from health applications like remote monitoring of diabetes to financial applications like mobile banking and peer-to-peer payments.

In addition, more and more parts of the United States have access to advanced 3G wireless services, and the rollout of advanced next generation 4G services, such as Wi-Max and LTE, is proceeding. These next generation services are important not just because they will continue to serve as a platform for robust innovation in mobile services and applications, but also because they offer the promise of enabling the entry of a third broadband "pipe" to the home (to compete with cable modem and DSL/fiber service). This new pipe offers to not only bring additional competition and consumer benefits to all Americans, but also to provide broadband services in

some rural areas that now cannot access wired broadband services. In addition, because wireless broadband may provide lower priced broadband in all areas, it has the potential to help lower-income Americans who to date have not previously subscribed to broadband. In short, wireless services promise to be a growing and more important part of the IT ecosystem in the United States.

It is in this environment of innovation and digital transformation that your Committee considers legislation to ban new discriminatory taxes on wireless services. Imposing discriminatory taxes on wireless services is in essence taxing one of the major engines of U.S. innovation and economic growth, and as discussed below has significant impacts on economic growth and economic fairness.

Principles of Optimal Taxation: Many tax economists suggest that there are three principles of optimal taxation of commodities. An efficient commodity tax: 1) induces little change in consumer behavior; 2) is not borne disproportionally by low income individuals and households; and 3) is not placed disproportionally on activities with strong positive externalities. Discriminatory taxes on cellular telecommunications violate all three principles. I will examine each principle.

Discriminatory Taxes on Wireless Services Reduce Consumer Use

Opponents of federal legislation to ban the introduction of new discriminatory taxes on wireless services argue that the rapid growth in cellular telephone subscriptions suggests that the higher taxes on cellular service have no negative impact. And they point to the rapid growth of cellular telephone service. But the major impact of discriminatory taxes is not on the decision to buy or not buy a cell phone (although for some individuals this may be the case). Rather, it is on the consumption of wireless services, with individuals facing higher taxes purchasing plans with fewer minutes and fewer services. And for a whole host of other services which are not as necessary, as of yet, to daily life, discriminatory taxes reduce not only use but adoption of these services. These include wireless data services and wireless Internet.

Scholarly studies find that the impact of price (of which taxes are a component) on wireless expenditures is quite high. Rappoport, Alleman, and Taylor found that for the average monthly U.S. consumer expenditure on cell phone service ($52 per month),[2] every dollar of additional tax reduces expenditures by more than $1.60..[3] Ingraham and Sidak find slightly lower, but still high, elasticities of demand of between $1.23 and $1.29 (in other words, increasing taxes on wireless services by $1 reduces consumption of the services by between $1.23 to $1.29).[4]

Because wireless data services, including broadband Internet access, are an even more discretionary purchase for most consumers, the impact of taxes on wireless data and broadband are likely even higher. Indeed, Austin Goolsbee finds the elasticities for broadband to be between 2.15 and 3.50, with an average of 2.75. In other words, increasing taxes on wireless data and Internet services by $1.00 reduces consumption of these services by an average of $2.75.[5]

This very high impact of taxes on consumer demand also affects producer decisions on where to deploy services. As the GAO reported, one of the most important factors for companies considering deploying broadband to an area was the expected demand for broadband service.[6] Since adoption rates drive demand, not only do wireless taxes affect the ability of citizens to afford wireless Internet access, but they could also discourage some companies from deploying 3G and 4G systems. This conclusion is supported by research by Goolsbee who found that "in several medium sized markets, applying a tax on broadband would have reduced the potential

producer surplus enough that suppliers would not be able to cover their fixed costs and would choose to delay the diffusion of broadband in those markets."[7]

Distributional Impacts of Wireless Taxes

It might be one thing if discriminatory wireless taxes affected mostly demand from higher income consumers. But of all advanced information technology and communications services, wireless is one of the most widely adopted services, with wireless services much more evenly distributed among income groups than fixed broadband. Rappoport, Alleman, and Taylor find that while the highest income Americans ($100,000 or more in annual income) adopted fixed broadband at 125 percent the rate that the average income American adopted a set of telecommunications and computing products (PCs, Internet, Broadband, Mobile, Internet ready PCS and PCS Internet Subscriber (in 2003), mobile phone adoption was only 40 percent higher while mobile Internet use was just 44 percent higher. In other words, low income households were almost as likely to adopt wireless services as higher income households. Moreover, when examining just adoption of Internet-enabled cellular services (as opposed to all the listed services and products), low-income households (less than $15,000 per year) adopted the service at about the same rates as high income households.

Because low income households are almost as likely to subscribe to wireless services as higher income households, discriminatory taxes on wireless services are more regressive than many other kinds of taxes. And because of the structure of many of these taxes, the distributional impacts are even worse. When some jurisdictions (like Baltimore, MD for example) impose surcharges on service, the tax is not proportional to use, but is the same on all users, regardless of income or use.

These discriminatory taxes play a role in limiting wireless data and broadband adoption, particularly among low income households. As GAO reported, the "price of broadband service remains a barrier to adoption of broadband service for some consumers" and noted that "households with high incomes were 39 percentage points more likely to adopt broadband than lower-income households."[8] Likewise, the Pew Internet and Society project found that just 25 percent of low income Americans with less than $20,000 annual income subscribe to broadband services, compared to 85 percent of households with over $100,000 in income.[9] Moreover, over one-third (35 percent) of dial-up users say that price is the major reason for not switching to broadband.[10] Raising the price of wireless broadband service through discriminatory taxes will slow adoption of broadband, particularly as it's likely that for many low income households in the future, wireless will be an important means of accessing the benefits of the Internet.

Impact of Discriminatory Wireless Taxes on Economic Growth

Telecommunications taxes have been high historically because states and localities could tax these with little fear of losing revenue to consumers shifting their expenditures. For example, high retail sales taxes could induce residents to shop in nearby jurisdictions with lower rates. In contrast, taxing services that people consumed in their homes was seen by states as a more reliable way to raise revenue. This is one major reason why telecommunications services is in most jurisdictions taxed more heavily than other goods or services.

This may once have made sense at a time when the principal telecommunications service consumed by people was "plain old telephone service." But it certainly makes no sense now when telecommunications services, including wireless, are key drivers of the digital economy. In

fact, many jurisdictions, especially the states and the federal government, recognize that it is a driver, and are investing public funds to promote it.

One of the reasons why governments are investing in digital communications technologies, including wireless, is because they exhibit what economists call positive externalities (an externality occurs when the impacts of decisions by producer or consumers spill over to the broader economy.) One of the most important externalities from wireless services is network externalities. Network externalities are the effects on a user of a product or service of others using the same or compatible products or services. Positive network externalities exist if the benefits are an increasing function of the number of other users. In this case a good becomes more valuable to individual consumers as others also purchase that good. The classic example is telephone service, which becomes more valuable to a user if more people are connected. Indeed, telephone network externalities have long been recognized and have been a major rationale behind universal service policies. The same kind of externality exists with wireless telephone service. But externalities from wireless broadband are likely to be even more significant, in part because broadband enables new services to emerge that will benefit broadband users.

There are two kinds of network externalities from broadband, direct and indirect. Direct externalities relate to subscribership. Just as the fax system became more valuable when more people had faxes, broadband becomes more valuable when more people have broadband; the more likely others are to subscribe. This is in part because the decision to purchase broadband is dependent in part on having sufficient knowledge about it. Unlike a service like haircuts or a product like TVs that most people are familiar with and can accurately value, fewer people are familiar with wireless data and Internet services and cannot always value their benefits.

Empirical evidence suggests that this is a factor that affects subscribership. Goolsbee and Klenow found that people are more likely to buy their first computer if they live in areas where a high proportion of households own computers or if a high fraction of their friends and family own computers – even controlling for other factors affecting computer ownership. If ownership rates are 10 percent higher in one city than another in a given year, the gap will be 11 percent the following year, assuming all else stays constant.[11] They explain this effect on the basis that the number of experienced and intensive computer users creates a "spillover" effect for non-users. They conclude that the effect is most probably related to the use of e-mail and the Internet – consistent with the view of computers being the hub of an information and communications network. But it is also likely to be related to the fact that people who have friends and neighbors with broadband are more likely to be able to better understand its value. While dial-up connections also enable network externalities for applications like email, only wireless broadband would generate them for mobile applications. Moreover, these externalities are likely to be higher in lower-income neighborhoods where individuals may have less familiarity with these technologies.

Indirect network externalities from broadband relate to its effect on applications and content that requires broadband transport to work effectively. One reason why broadband take-up is not higher is because data-rich applications that could be accessed over broadband have not developed faster. Why develop mobile applications, especially ones that need moderate- to high-speeds, when very few people would be able to access them? This "chicken-or-egg" issue slows deployment of wireless broadband. More data-intensive applications would make mobile broadband more valuable, while more mobile broadband subscribers would make data-intensive applications more commercially viable. Indeed, more mobile broadband would spur the development of a whole host of new applications that are not viable now.

The second major kind of broadband externality relates to the fact that broadband enables consumers to become more efficient, thus in turn driving higher rates of productivity and economic growth. In the old economy producers produced and consumers consumed. Producers invested in new capital equipment to produce goods and services more efficiently and consumers in turn bought these cheaper goods and services. This dichotomy between producers and consumers is blurring in the new digital economy where a whole host of digital tools are enabling consumers to become, in the words of futurist Alvin Toffler, "prosumers" who act at the same time as both consumer and producer.

Whether it's conducting mobile banking, getting real time information on traffic conditions, or engaging in e-government services, mobile Internet is enabling self-service and becoming an important share of the economy, helping to boost productivity and to increase consumer convenience. Indeed, with the service sector now accounting for over 80 percent of employment, prosumerism will simply have to play a much larger role if we are to continue to boost incomes and economic growth. Wireless broadband promises to be a key technology for boosting prosumer productivity.

Wireless Internet is also improving Americans' quality of life. For example, using a wireless data reader that connects to standard telephones, patients can securely transmit the medical data recorded by these medical devices to their health care provider. Their physicians can then review the patients' health information remotely, thereby reducing the number of office visits, a major benefit for patients with chronic diseases or who need frequent care. Similarly, obstetricians can remotely monitor the blood pressure and fetal heart beat of their patients at home, rather than requiring the patients to be admitted to the hospital.[12] Wireless is also helping older Americans minimize the risks associated with solitude. Currently, for example, older adults and individuals with disabilities can use a personal emergency response system so that with the push of a button they can call for medical assistance. Personal emergency response devices typically consist of two components: a wearable wireless transmitter and a telephone unit that connects to an emergency response center. Such devices can particularly help adults who are at risk of a stroke or falling live independently. They can also save money by reducing the length of time for inpatient hospital care or nursing home care.

Economic studies of the impact of taxes on wireless service support this argument that reduced wireless activity will have negative economic impacts. Ingraham and Sidak find that for every $1 of tax, national economic welfare falls by between $1.23 and $1.95, depending on the level of the tax existing in a jurisdiction (if a state with already high taxes on wireless service increases taxes even more, the overall economic welfare loss would be 1.95).[13] Hausman also finds significant, albeit somewhat smaller, impacts of societal economic welfare. He finds that for every additional dollar raised in taxes on wireless services, the marginal efficiency cost to the economy is between $0.72 and $1.14.[14] In other words, when a jurisdiction adds a tax on wireless service, for every dollar it receives, society loses between $0.72 and $1.14.

The impact of taxes on wireless broadband is likely to be even higher, given the even-broader network and prosumer externalities. In fact, Goolsbee finds this to be the case, with the overall economic welfare loss from $1 of taxes on broadband (wireless or wired) being between $3.46 and $5.15.[15] In other words, for every dollar raised in taxes, society as a whole loses at least $3.46.

The Rationale for Federal Action

Even with these significant negative impacts from discriminatory wireless taxation, some argue that jurisdictions should be free to impose these taxes. If these negative effects were confined to the jurisdiction imposing the taxes, the opponents of legislation would have a stronger, but in my view, still inadequate case. But the costs of discriminatory wireless taxation are not only borne by residents of the jurisdiction, but by all Americans. In particular, while sub-national jurisdictions also benefit from higher levels of wireless adoption, there is an asymmetrical distribution between the costs and benefits of taxes on wireless services. When jurisdictions tax wireless services, they receive all of the financial benefit of the tax, but the net social cost of lower rates of wireless service access extends beyond the jurisdictions' borders to affect residents and businesses across the entire nation.

Second, opponents of this legislation argue that it will hurt state and local fiscal health. But this legislation only prohibits new discriminatory taxes. Moreover, states and localities will benefit as higher levels of productivity generate lower prices for their citizens. In addition, the economic benefits of a healthy national economy will provide state tax administrators opportunities to increase their state tax revenue.

Third, opponents will argue that this simply shifts taxes from one service or product to others. Of course it does. But that's not the point. The point is that the negative effects of taxes on wireless services are higher than on most other services or products. For example, Hausman finds that the effect on welfare of general taxation and income taxation is between 54 to 71 percent less costly to economic efficiency and net economic welfare than taxes on wireless.[16] And taxes on items with negative externalities, such as products like petroleum which emit greenhouse gas emissions, would have positive effects on economic welfare. Opponents also argue that many types of industries are subject to their own special taxes. But again, the major reason why discriminatory wireless taxes are a bad idea is not because discriminatory taxes themselves are a bad idea. Taxes on tobacco products are rightly justified by the adverse health effects from smoking. Rather, it is discriminatory taxes on products or services with large positive externalities that are problematic.

Conclusion

Wireless innovation is likely to continue to bring new consumer functionalities, business and government benefits and overall economic growth. However, the evidence clearly shows that taxes on wireless services, particularly discriminatory taxes, have a clear negative effect on adoption of these services and because of that, negative effects on both U.S. economic growth and economic opportunity for all Americans, and lower income Americans especially.

Notes:

1. Robert D. Atkinson and Andrew S. McKay, "Digital Prosperity: Understanding the Economic Benefits of the Information Technology Revolution," (Washington, DC: The Information Technology and Innovation Foundation, 2007) <www.itif.org/index.php?id=34>.

2. U.S. Bureau of Labor Statistics, "Spending on Cell Phone Services Has Exceeded Spending on Residential Phone Services," 2007, <www.bls.gov/cex/cellphones2007.htm>.

3. Paul Rappoport, James Alleman, and Lester Taylor, "Household Demand for Wireless Telephony: An Empirical Analysis," Presentation to the 31st Annual Telecommunications Policy Research Conference, Sept. 19, 2003, George Mason University, Arlington, Va.

4. Allan T. Ingraham and J. Gregory Sidak, "Do States Tax Wireless Services Inefficiently? Evidence on the Price Elasticity of Demand," *Virginia Tax Review*, Vol. 24: 249-261, 2004.

5. Austan Goolsbee, "The Value of Broadband and the Deadweight Loss of Taxing New Technology," *Contributions to Economic Analysis & Policy*: Vol. 5 : Iss. 1, Article 8. (2006) <www.bepress.com/bejeap/contributions/vol5/iss1/art8>.

6. Ibid.

7. Austan Goolsbee, "The Value of Broadband and the Deadweight Loss of Taxing New Technology," NBER Working Paper 11994 (National Bureau of Economic Research, Feb. 2006): <papers.nber.org/papers/W11994>.

8. Ibid.

9. Pew Internet and American Life Project, Home Broadband Adoption 2008.

10. Ibid.

11. Austan Goolsbee and Peter Klenow, "Evidence on Learning and Network Externalities in the Diffusion of Home Computers," *Journal of Law and Economics*, October 2002, Vol XLV (2, part 1): 317-344.

12. E. Kyriacou, et al., "Multi-Purpose Healthcare Telemedicine Systems with Mobile Communication Link Support," *BioMedical Engineering Online* 2 (2003), <www.biomedical-engineering-online.com/content/2/1/7> (accessed July 24, 2008).

13. Ingraham and Sidak, op. cit..

14. Jerry Hausman, "Efficiency Effects on the U.S. Economy from Wireless Taxation," *National Tax Journal*, vol. LIII, No. 3., Part 2, 733-742.

15. Austan Goolsbee, "The Value of Broadband and the Deadweight Loss of Taxing New Technology," op. cit.

16. Jerry Hausman, op. cit.