

The impact of government policies on access to broadband

Some thoughts on what we know

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With a new focus for federal universal service programs on broadband and NTIA BTOP funding for broadband adoption projects, recent years have been “exciting times” for those interested in broadband policy aimed at stimulating adoption. While most of the new programs are still too new to be rigorously evaluated, lessons from older academic study can inform our expectations and lend guidance toward evaluating program success. In the following few pages, I review what we know from the last decade and a half of literature on the impact of regulation on broadband adoption, discuss the mostly woeful attempts at evaluating adoption stimulus plans in the past, and take a quick peek at evaluations of the most recent federal stimulus efforts.

Regulation and Broadband Adoption

While much of the current interest in stimulating broadband adoption is centered around subsidies to households, until recent years such subsidies were rare in the US. Government policy that affected broadband adoption was instead more indirect in nature. Here I review what we know from the economic literature about the impact of federal and state policy on broadband adoption, prior to the recent BTOP stimulus funding and universal service reform.¹

Until the last five years or so, subsidies at state or Fed level were rare. In 2001, only 3 states had explicit broadband stimulus policies, and by 2005 that number had risen to only 15 states. Such state policies directed at broadband included private-sector grants and loans targeted to deployment in underserved areas, as well as the use of universal service mechanisms to stimulate investment. One study found that *none* of these policies was positively correlated with the per capita broadband rate in the state with the exception of rural-targeted grants.

On the federal side, demand-side subsidies until recently included only the “e-rate” for schools and libraries. No measurable effect on broadband availability to the community (much less broadly-based measures of usage) has been shown for these programs. However, one prominent study did find that schools spent more on broadband connections and ended up with more connections than would have

¹ This section draws on James E. Priefer and Daniel Heil (2009), “Is Regulation a Roadblock on the Information Highway?” in *Handbook of Research on Telecommunications Planning and Management for Business*, I. Lee (ed), Hershey, PA: IGI Global, and the reader is directed there for the academic citations for the results discussed here.

been the case without the e-rate funding.² While it is not hard to find case studies of this or that neighborhood, organization, or school that benefited from being brought online by a subsidy program, there is scant evidence that the state and federal money spent has had large enough impacts to be measurable by econometric studies.

Governmental policy can also affect broadband take-up through the indirect route of altering the opportunities for profit for service providers or the competitive climate in which firms compete to offer service. Areas under rate of return regulation, for example, have been found to have a lower probability of broadband availability than areas under price caps or rate moratoria, although the impact is not large. Other studies find that unbundling of access to the incumbent's network is less successful than intermodal competition (i.e., cable vs. telco) at speeding broadband deployment in developed nations. In other international comparisons, full-loop unbundling requirements have been found to exhibit no apparent impact on broadband penetration. Lower rates for unbundled network elements can encourage entry by competitors, thus spurring competition that may spill over to the broadband market as well. Studies from Europe and the US at least partially support this conclusion, but again the sizes of the effects (although statistically significant) are small. Perhaps it should not surprise us that indirect policy effects appear to have limited or no impact on broadband deployment and adoption. Hence the current interest in direct subsidies.

Assessment of Demand-Stimulus Programs

With the first round of BTOP projects coming to fruition, there will be a wave of program evaluations conducted. If the past guides the present, expect many evaluations to be nearly useless at addressing the main question of interest to an economist (and the policy maker): what was the causal impact of the program on broadband adoption and usage? A major theme of previous research on broadband program evaluation is that the body of evidence regarding evaluation of demand-side efforts to encourage broadband adoption is exceedingly thin.³ In one of her papers, Sharon Strover herself noted that "there is a lack of strong empirical data that would provide compelling evidence that economic and community development goals could be realized through programs that promote computer and Internet access."⁴ I agree, and also point out that evidence adhering to high econometric standards for causality is especially lacking. Too many "program evaluations" seek only to show that the money was spent as intended, without careful comparing actual instrumental outcomes with a convincing counterfactual. In one of the rare studies in which the analysis of outcomes is properly done, the study on the impact of the e-rate on schools and students mentioned above, the researchers find that investment in broadband connectivity had *no* impact on achievement test scores in math, reading, or science.

² Austan Goolsbee and Jonathan Guryan (2006), "The Impact of Internet Subsidies in Public Schools," *Review of Economics and Statistics* 88(2): 336–347.

³ This section relies on (and quotes liberally from) Janice A Hauge and James E. Prieger (2010), "Demand-Side Programs to Stimulate Adoption of Broadband: What Works?" *Review of Network Economics*. Volume 9, Issue 3, Pages –, ISSN (Online) 1446-9022, DOI: [10.2202/1446-9022.1234](https://doi.org/10.2202/1446-9022.1234), August 2010.

⁴ Strover, Sharon (2009), "America's Forgotten Challenge: Rural Access," ch. 11 in ...*and Communications for All: A Policy Agenda for the New Administration*, A.M. Schejter (Ed.), Lanham: Lexington Books.

What appears to be missing from most program evaluations are the features most economists would begin with: cost-benefit analysis and rigorous evaluation of outcomes using control groups or quasi-experimental econometric methods to estimate counterfactuals. Far too many evaluations use “soft” analytical methods from the social sciences to come to “hard” causal conclusions. While on the subject of cost-benefit analysis, it may be interesting to consider one recent project mostly funded by BTOP.⁵ This project spent \$6.8 million dollars to outreach broadband to 2,835 low-income seniors. About 1,100 of the seniors has signed up for the classes by the six-month mark. Cost per user: over \$6,000. Is this a worthwhile expenditure of public funds? It all depends on what the private and social value of connection to the Internet is for these individuals. However, consider this thought experiment: what if we offered each of these low-income seniors the choice between the broadband instruction and opportunities and a check for \$6,000. Do we really think any of them would choose broadband over the cash? And, if as economists we believe in revealed preference and the sovereignty of the consumer preferences, what does this thought experiment reveal?

Evaluation of BTOP projects

This concluding section is necessarily brief, since there are no peer-reviewed published studies evaluating the recent BTOP-funded projects. However, one study from a large group of scholars from Michigan was just released three weeks ago.⁶ The study evaluated a \$6 million BTOP grant project to upgrade public Internet resources in urban libraries in Michigan. Results from pre- and post-project surveying indicated “no changes between [before and after] with respect to increased broadband awareness, home Internet access through either a computer or smartphone, or high speed home fixed-line broadband.”

My hope is that with a new set of broadband adoption projects to evaluate and a heightened awareness of the weak attempts at evaluation put forth in the past, we can move beyond the qualitative case study and begin to quantify rigorously what works and what society gets for its stimulus dollars. Given the difficulty found in previous literature to find large impacts of policy on broadband adoption or to use convincing methods to evaluate programs, I am not at all sure what we will find. Let the study and discussion begin.

⁵ The project is *Getting Illinois Low Income Seniors and People with Disabilities Online* (see James R. Ciesla and Diana L. Robinson (2011), *The Getting Illinois Low Income Seniors and People with Disabilities Online Demonstration Project* (Stage One, Six Month Formative Evaluation Findings, <http://apps.fcc.gov/ecfs/document/view?id=7021705786>). There is nothing particularly special about this project that warrants my discussion of it, other than that information on it was readily available.

⁶ Brandon Brooks *et al.*, Impacts of the Broadband Telecommunication Opportunities Program in Michigan Urban Communities (March 31, 2013). Available at SSRN: <http://ssrn.com/abstract=2242573>