

# The Economic Impacts of Declining Investment in Broadband

BY ROBERT D. ATKINSON | OCTOBER 2009

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Earlier this year ITIF published a report that estimated the employment impact of additional investments in three IT areas; health IT, smart electric grids and broadband. Our analysis showed that investing an additional \$10 billion in one year on broadband networks will create or retain 498,000 U.S. jobs for that year.<sup>1</sup> Investments in broadband spurs job growth through direct job creation (e.g., engineers, technicians and road workers hired to lay broadband “pipes”), jobs indirectly related to the production process, such as circuit board productions to be used in routers, and induced jobs, which are created when workers in the broadband production process spend their paychecks in establishments such as restaurants and retail stores.

Investment in digital infrastructure also creates further job growth and economic activity by creating a “network effect.” Unlike traditional infrastructure projects, digital infrastructure leads to an additional employment growth multiplier by promoting new consumer and business behavior, functionalities and industries enabled by advanced broadband connectivity.

Although our analysis aimed at modeling the effects of increased broadband investments on job growth, the model can also be predictive in the other direction. Current capital expenditures on broadband networks support workers through direct, indirect and induced

job preservation and therefore it is reasonable to predict a reduction in current capital expenditures will have a similar negative impact on employment as increased investments would have a positive impact on employment. If capital expenditure falls, either because of realities in the marketplace or by regulatory or other actions government takes that would reduce the incentive to invest, then jobs would be lost, at least in the short term.

To measure the impact of additional investment in broadband on direct, indirect and induced jobs, ITIF used a standard economics methodology. We determined the number of direct jobs



created by using industry-specific data from the Bureau of Labor Statistics on employee compensation in the telecommunications and related computer and electronic equipment industries. We then calculated the number of indirect and induced jobs created using industry-level employment multipliers from the Bureau of Economic Analysis. Within the communication sector this employment multiplier equals 2.52 and within the manufacturing sector the employment multiplier is 2.91.<sup>2</sup> Finally, our analysis anticipates an additional network multiplier effect of 1.17 through the creation of new industries.<sup>3</sup>

Capital expenditures on broadband equal roughly \$60 billion dollars annually.<sup>4</sup> Furthermore, investment in broadband has historically been characterized as demand elastic, or volatile in the face of declining demand and uncompetitive or burdensome regulation. Indeed, because broadband investments offer such a robust employment effects per investment, for the reasons previ-

ously discussed, even marginal declines in investments could have substantial effects on employment. For example, according to our analysis a decline in capital expenditures by 2 percent would reduce employment by 31,382 and a reduction in expenditures by 5 percent would reduce employment by a further 47,073, or 78,455 in total. If capital expenditure reductions were more severe reductions, the impact on employment would also be more severe. For example, a decline in capital expenditures by 10 percent would reduce employment by 156,911 and a decline by 20 percent would equal a loss of 313,822 jobs.<sup>5</sup>

Broadband is a key component of digital infrastructure and as such increased investments have a positive effect on job creation, however the pendulum swings both ways. Restrictive regulations or uncertain market conditions could reduce investment, and hence employment.

## ENDNOTES

1. Robert D. Atkinson, Daniel Castro and Stephen Ezell, *The Digital Road to Recovery: A Stimulus Plan to Create Jobs, Boost Productivity and Revitalize America*, (Washington, D.C.: ITIF, 2009).
2. Josh Bivens, "Updated Employment Multipliers for the U.S. Economy," *Working Paper No. 268*, (Washington, D.C.: Economic Policy Institute, 2003).
3. Robert Crandall, Charles Jackson, and Hal Singer, *The Effects of Ubiquitous Broadband Adoption on Investment, Jobs, and the U.S. Economy*, (Washington, D.C.: Criterion Economics, 2003).
4. United States Bureau of the Census, *Annual Capital Expenditures Survey*, (Washington, D.C.: U.S. Census Bureau, 2007). ACES data describes overall industry capital expenditures, not specifically capital expenditures for broadband, therefore we estimated the figures to be lower than what is articulated by ACES.
5. In ITIF's *Digital Road to Recovery* we were able to predict the network multiplier effect of additional investments in broadband, health IT and smart grid, however, when predicting job loss the multiplier effect may vary and therefore we were unable to calculate the specific effect of reduced capital expenditure on employment throughout the broadband network. However, it is reasonable to assume reduced capital expenditure would affect employment throughout the network.

## ABOUT THE AUTHOR

Dr. Robert D. Atkinson is President of the Information Technology and Innovation Foundation, a Washington, DC-based technology policy think tank. He is also author of *The Past and Future of America's Economy: Long Waves of Innovation that Power Cycles of Growth* (Edward Elgar, 2005).

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