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Infrastructure Investment and Economic Growth: Surveying New Post-Crisis Evidence

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Does an increase in government spending create or destroy private sector jobs? Or more particularly, does additional spending on infrastructure—fixing existing roads and bridges, or building new ones—generate positive spillover effects for the rest of the economy?

This question featured prominently in the 2009 debate over the size of the fiscal stimulus package. The Obama Administration, led by Christina Romer of the Council of Economic Advisors, wrote in January 2009, "we expect the proposed recovery plan to have significant effects on the aggregate number of jobs created, relative to the no-stimulus baseline."[1]

In response, conservative economists and politicians argued that rather than creating new jobs, government spending on infrastructure would crowd out private sector hiring. Over 200 conservative economists expressed stimulus skepticism, with a Cato Institute statement proclaiming "we the undersigned do not believe that more government spending is a way to improve economic performance."[2] The net result: The Obama administration ended up getting less to spend on infrastructure than it would have and should have.

What's more, the debate over the size of the spillover effect—also known as "multipliers"—left lasting scars and hardened battle lines. Since then, proponents of higher infrastructure spending, including business stalwarts such as the U.S. Chamber of Commerce, have faced intense skepticism about the economic benefits of improving our transportation infrastructure. For example, the Department of Transportation funding programs were reauthorized in 2012 only after three years of temporary stop-gap extensions, with funding levels essentially unchanged from the previous authorization in 2005.[3]

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In this paper, we try to go beyond the sterile back and forth to uncover the real story about the economic spillovers from infrastructure spending. In particular, we look at a series of new studies that have been done since the 2009 policy arguments, using a wide variety of data sources and analytical techniques.

New empirical research conclusively supports the view that hiring for government supported infrastructure projects creates a significant number of private sector jobs in the rest of the economy. Further, these studies provide fresh evidence that spending on infrastructure has a large, positive multiplier effect on the economy. In fact, our analysis shows an emerging consensus that for every $1 spent on transportation infrastructure, the increase in economic growth is between $1.5 and $2.

The case for increasing investment in transportation infrastructure—roads, bridges, and public transit systems—is clear. However, such public investment requires both the availability of financing and the will to spend it. Typically, a substantial portion of state and local infrastructure spending is financed by federal funds. At the same time, a substantial portion of local infrastructure spending is financed by state funds, depending on the state.

> Tackling the large deficit in transportation infrastructure investment will require increased financial commitments from all levels of government.

Taking all of the sources of funding together, real public investment in transportation infrastructure by state and local governments has fallen by about 20 percent since 2005. At the same time, while public investment was falling, real private investment in communications equipment, a measure of broadband infrastructure, increased by almost 50 percent. This is astonishing considering the severity of the 2007-2008 economic crisis.

This striking divergence between public investment in transportation infrastructure and private investment in communications shows how unbalanced this recovery has been. While the communications boom is driving U.S. growth and job creation, other sectors of the economy lag behind.

Repairing and upgrading our nation's transportation infrastructure is critical to supporting U.S. international trade, regional commerce, and local access to essential services. The contrast between the private sector's massive investment in high speed broadband and the public's meager investment in transportation infrastructure should be a wake-up call to U.S. policymakers.

Of course, the decline in public investment, particularly at the state and local level, reflects the steep drop-off in revenues during the recession. Many state and local governments continue to face tight budgets, and unlike Washington, they can't borrow readily to maintain and improve their infrastructure. Federal funding on public goods, meanwhile, has not been enough to fill the gap.

In this paper, we argue that the government is in the best position to fund transportation infrastructure projects, given the inherently public nature of roads, bridges, and public transit. Moreover, if the government chooses to invest in a market that already has private competition, it risks crowding out or displacing potential private investment. For these reasons, we believe federal, state, and local governments should make investing more in infrastructure a higher priority.

Finally, this paper argues that tackling the large deficit in transportation infrastructure investment will require increased financial commitments from all levels of government. Given low interest rates, it makes economic sense for the federal government to borrow to fund investments that

will generate new jobs and growth. Relying more on public-private partnerships also will allow government to leverage more private spending on public goods.

REPLENISHING AMERICA'S TRANSPORTATION CAPITAL

Building and maintaining our nation's transportation infrastructure—roads, bridges, water and public transit systems—is a vital part of a new, high-growth strategy for America. Transportation infrastructure is a critical foundation for sustainable economic growth, attracting business investment, facilitating basic trade and commerce, and allowing for the transport of goods locally, nationally, and worldwide. The United States cannot rebuild its prosperity and global competitiveness on a foundation of aging and inadequate transportation infrastructure.

Moreover, the condition of state and local transportation infrastructure can be a key determinant of that region's relative competitiveness. Businesses make location decisions based on access to quality roads and bridges to facilitate trade and transport. Urban companies rely on decent roads and public transit to bring workers in from the suburbs and exurbs. At the household level, the condition of public infrastructure determines the desirability of an area as a place to live—for example, convenient and low-cost access to schools, hospitals, electricity, and clean water.

Thanks to decades of deferred maintenance, however, much of our nation's infrastructure is in poor or failing condition. In its "2013 Report Card for America's Infrastructure," the American Society of Civil Engineers (ASCE) graded our nation's roads, aviation, and transit systems at a "D", ports at a "C", and bridges at a "C+".[4] Further, the ASCE argues the failing state of our nation's infrastructure will come at great economic cost if the current lack of investment continues. In 2013, the ASCE estimated there will be a cumulative funding shortfall in building and maintaining surface transportation and airports of almost $900 billion by 2020.[5] The majority of this gap is in surface transportation, which ASCE estimates will have a funding shortfall of $846 billion during this time period.

> Building and maintaining our nation's transportation infrastructure is a vital part of a new, high-growth strategy for America.

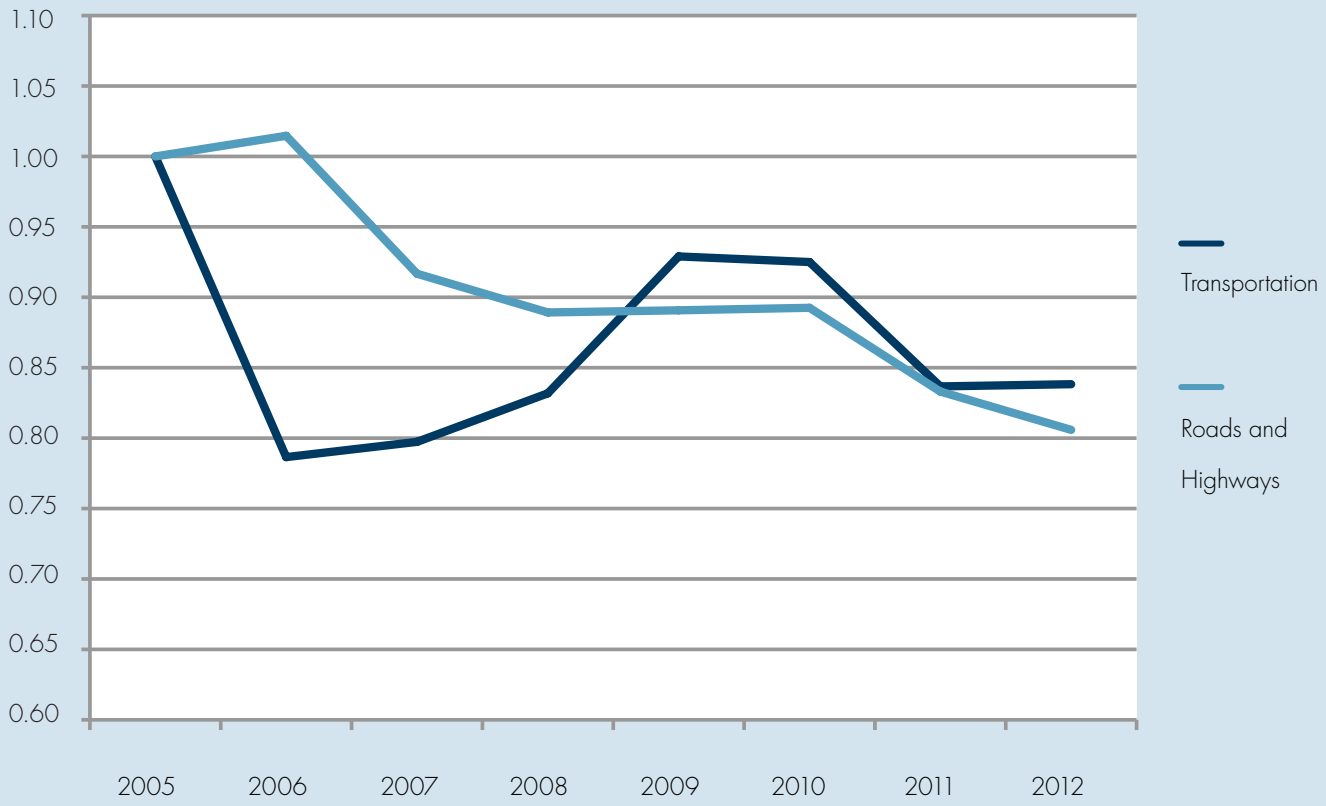
The deficit in America's transportation infrastructure comes at great potential cost to society. According to a 2012 study by Texas A&M Transportation Institute, sitting in traffic jams cost the United States $121.8 billion in 2011, or about $818 per commuter annually.[6] As the condition of our roads, highways, and public transit systems continues to deteriorate, the rising cost could have a significant impact on the millions of American commuters across the country. Worse, more delays, coupled with rising public transit prices to cover funding gaps, could disproportionately affect the low-income and inner city populations relying most on fast and affordable public transit to get to work.

FALLING STATE AND LOCAL GOVERNMENT INVESTMENT IN TRANSPORTATION INFRASTRUCTURE

In a few states, notably Texas and Maine, voters have approved measures to finance water and transportation projects.[7] Overall, however, state and local investment in transportation infrastructure is historically low, reflecting a combination of tight budgets and constrained funding from higher levels of government.

Since 2005, state and local government spending on roads and highways, and transportation systems has fallen almost 20 percent, in real terms. As demonstrated in the chart below, real investment in roads and highways has seen the steepest drop, falling precipitously since 2005. Both categories,

FIGURE 1: WRONG DIRECTION: STATE AND LOCAL GOVERNMENT REAL FIXED INVESTMENT IN PHYSICAL INFRASTRUCTURE (2005=1)



Source: BEA, PPI

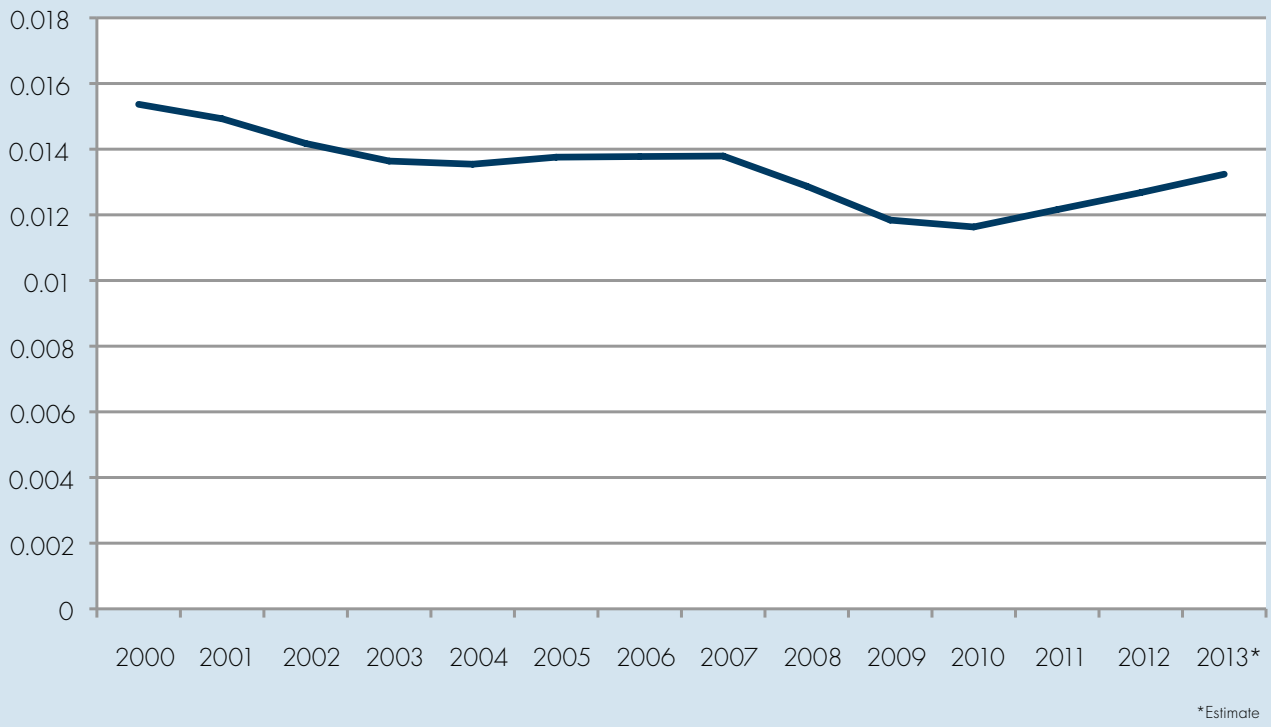
however, experienced declines in real investment, and all with a noticeable drop occurring post-recession.

The American Recovery and Reinvestment Act (ARRA)—the 2009 stimulus package—for a while offset the decline in state and local spending on transportation infrastructure. In 2009, Washington poured almost $50 billion into transportation infrastructure projects, including $26 billion for roads, highways, and bridges, and another $18 billion in high-speed rail and other public transportation projects.[8] The winding down of increased ARRA funding beginning in 2011 appears to have accelerated the fall in road and highway spending while bringing transportation spending back to its pre-recession state, in real terms.

Federal funding to state and local governments for transportation infrastructure has not increased since the ARRA stimulus ended. A 2011 CBO report comparing federal funding to state and local governments shows that transportation funding remains relatively low, even with the increase during the recession.[9]

The share of federal spending that goes to state and local governments for transportation projects also has been falling. As the chart below shows, the federal share slowly fell in the decade leading up to the recession, adjusted for inflation. It

FIGURE 2: HIGH PRIORITY? FEDERAL TRANSPORTATION GRANTS TO STATE AND LOCAL GOVERNMENTS AS A SHARE OF TOTAL FEDERAL SPENDING, IN 2009$



Source: OMB, BEA, PPI

plunged during the recession, and remains below already declining pre-crisis levels.

Uncertainty about what, if anything, Washington lawmakers plan to do about the nation's long-term debt problem makes it difficult for state and local governments to plan new transportation infrastructure projects. Typically, given the nature of transportation infrastructure, such projects are long-term and require a steady upfront financing stream. A lack of sustained federal funding could adversely affect how much funding states are willing to allocate to transportation, or delay certain transportation projects, especially for larger projects that could rely in part on federal aid.

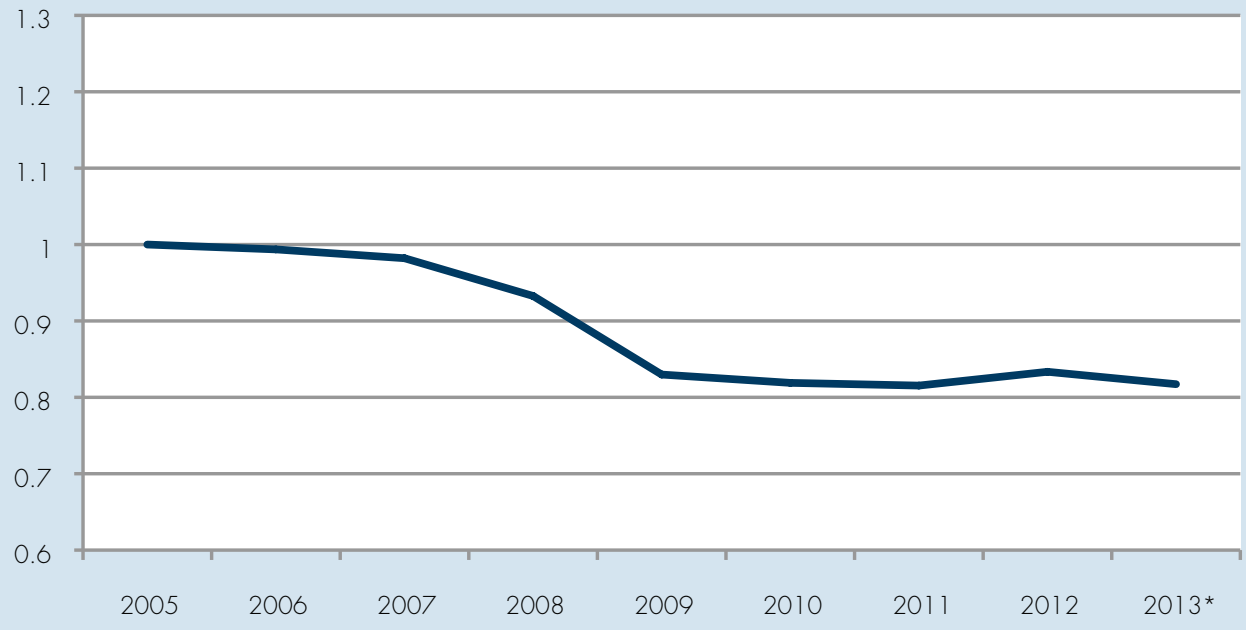
Most state and local spending on transportation infrastructure is on roads and highways. In 2012, roads and highways accounted for almost 80 percent of spending across the two categories, with public transit spending at about 20 percent. This makes the steep and consistent decline in road and highway investment particularly worrisome when considering ASCE's estimated funding shortfall for surface transportation.

Not surprisingly, as state and local government spending on roads and highways declined, so did employment in the highway, street, and bridge construction industry. Figure 3 shows employment in this industry fell by 20 percent since 2005.

TRANSPORTATION INFRASTRUCTURE BRINGS LARGE ECONOMIC BENEFITS

The potential boost to economic growth from investment in transportation infrastructure projects—a new bridge or general maintenance, for example—is both direct and indirect. The

FIGURE 3: NON-RECOVERY: HIGHWAY, STREET, AND BRIDGE CONSTRUCTION EMPLOYMENT (2005=1)



Source: BLS, PPI

direct economic impact goes to those involved in the transportation infrastructure project. This includes both the workers immediately involved in the construction, and the jobs required to support those workers, such as architects, engineers, and on-site food and sanitation providers.

The indirect economic impact is the local, regional, and even national economic boost that results from the construction of the new bridge or the road maintenance. Part of this spillover is the so-called "multiplier effect"—where the wages and salaries earned by those working on the bridge are spent on goods and services, which in turn generates additional spending by the providers of those goods and services, and so on.

Another indirect economic impact is enhancing state or regional competitiveness. For example, a new bridge may attract new businesses to an area because it provides faster access for commercial routes. The transportation time saved by the new bridge may also provide productivity gains for those who would have been driving for longer otherwise. Maintaining existing transport routes can also help businesses remain competitive.

The magnitude of the indirect economic spillover from investing in transportation infrastructure projects has traditionally been a subject of debate, especially surrounding the ARRA stimulus package.[10] Some studies have shown the spillover effect of infrastructure spending to be large. On the other hand, some empirical work could not conclude whether the indirect benefit justified the initial investment. During the 2009 stimulus debate, these studies were used as a political shield by both Democrats and Republicans to argue one side over another.

However, the new body of post-crisis empirical research indicates that the indirect spillover

benefits could be quite significant. For example, in a 2013 analysis on how to promote economic growth, the McKinsey Global Institute calls transportation infrastructure investment a potential "game changer" for the U.S. economy.[11] Their analysis found that spending an additional $150-$180 billion on transportation infrastructure annually through 2020 could result in a concurrent boost to the economy in the range of $270-$320 billion. That is, by increasing the amount spent on transportation infrastructure annually by just one percent of GDP, they estimate a boost to the economy of 1.8 times that amount.

A 2013 Congressional Budget Office (CBO) report found that federal transfer payments to state and local governments for infrastructure provide high returns to economic growth, second only to direct purchases of goods and services by the federal government.[12] CBO estimated the fiscal multiplier from public spending on infrastructure could be as high as 2.2—that is, for every $1 spent on transportation infrastructure, it would generate $2.2 dollars in economic output.

> A new body of post-crisis empirical research indicates that the indirect spillover benefits could be quite significant.

A 2011 study by Dartmouth College researchers James Freyer and Bruce Sacerdote took a novel approach by examining monthly employment data by state and county to assess the connection between spending for specific projects and any resulting gains to employment. The authors concluded that stimulus spending on transportation infrastructure during the Great Recession was "highly expansionary" at the state and local level, and that "estimates excluding education spending suggest fiscal policy multipliers of about 2.0 with per job cost of under $100,000."[13]

Yet another estimate of fiscal multipliers by Moody's in 2011 found a boost to the economy of $1.44 for every $1 invested in transportation infrastructure.[14] Assessing a range of fiscal policy responses to jumpstart the recovery, Moody's estimated spending on transportation infrastructure to be at the higher end of their range.

Finally, Sylvain Leduc and Daniel Wilson at the San Francisco Fed published a study that found the multiplier from public infrastructure investment to be roughly two.[15] Looking at federal highway grants, as apportioned to states, the authors found that additional highway spending results in both a short-term direct impact and a long-term indirect boost to the economy, particularly in truck transportation and retail. Moreover, the authors found evidence that the additional highway spending authorized from the American Recovery and Reinvestment Act (ARRA) had a significantly larger effect on economic growth than pre-recession estimates would have suggested.

The relatively large economic spillover from investing in transportation infrastructure in today's economy may also be explained in part by the drought in state and local spending. Increased spending on highways, streets, and bridges could have a larger direct impact on employment now than before the fall. At today's relatively depressed emloyment level, it may be more likely additional construction crews would need to be hired for new projects.

ENCOURAGING PRIVATE INVESTMENT IN TRANSPORTATION INFRASTRUCTURE

Although the potential economic benefits of investing in transportation infrastructure are great, it is an area of little private sector investment. In fact, this was a key factor behind President Obama's recent push to encourage private funding for transportation infrastructure.[16]

The government finances most transportation infrastructure projects. According to a 2013 Urban Land Institute report, state and local governments fund three-quarters of all transportation

infrastructure projects, with the federal government making up most of the difference.[17] The upfront fixed costs of transportation infrastructure projects are too large, with too little direct benefit, to make a compelling business case for single companies, organizations, or individuals to make the investment. In other words, transportation infrastructure is a classic public good in that everyone with access to the bridge, road, airport, etc. will benefit.

> Transportation infrastructure is an area of little private sector investment.

Nonetheless, there are several ways the public sector can encourage more private capital in funding transportation infrastructure. One way is through expanded use of public-private partnerships (PPP). These partnerships bring in private equity from mutual funds or other investments—as opposed to corporate investment—to provide the upfront financing for an infrastructure project. In turn, the state or local government responsible for the project signs over future cash flows associated with the project, for example, toll revenues, as a way of providing a return to the investors.

PPPs have already been successfully implemented for several projects, and seem to be gaining traction.[18] For example, the modernization of the I-495 Express Lanes in Virginia was the result of a PPP.[19] However, there are also inherent upfront risks and uncertainties associated with transportation infrastructure projects that could affect the ability to use PPPs more widely.

Yet another approach to encouraging private sector funding for infrastructure projects is through a "National Infrastructure Bank." This would be a new federal entity that provides a combination of direct funding, loans, and guarantees to entice private sector participation, as a complement to other public-private funding instruments like municipal bonds.[20] The Progressive Policy Institute has previously written in support of a federal funding facility, both as a way to depoliticize project selection, and as a way to leverage public funding to entice more private capital to finance transportation infrastructure projects.[21]

The latest attempt to establish a federal program to fund transportation infrastructure was as in November 2013. A group of bipartisan U.S. Senators, led by Senator Mark Warner, introduced legislation that would establish a $10 billion facility to fund selected infrastructure projects at the state and local level. As with previous financing attempts, the "BRIDGE Act" would fund no more than 49 percent of a project as to encourage private finance participation.[22]

Unfortunately, to date, every Congressional proposal to establish an infrastructure bank or funding facility, strongly endorsed by President Obama, has gone nowhere. President Obama's newly announced 2015 budget includes an additional $300 billion for transportation infrastructure spending over the next four years.[23] It remains to be seen, however, if this latest proposal will have more success.

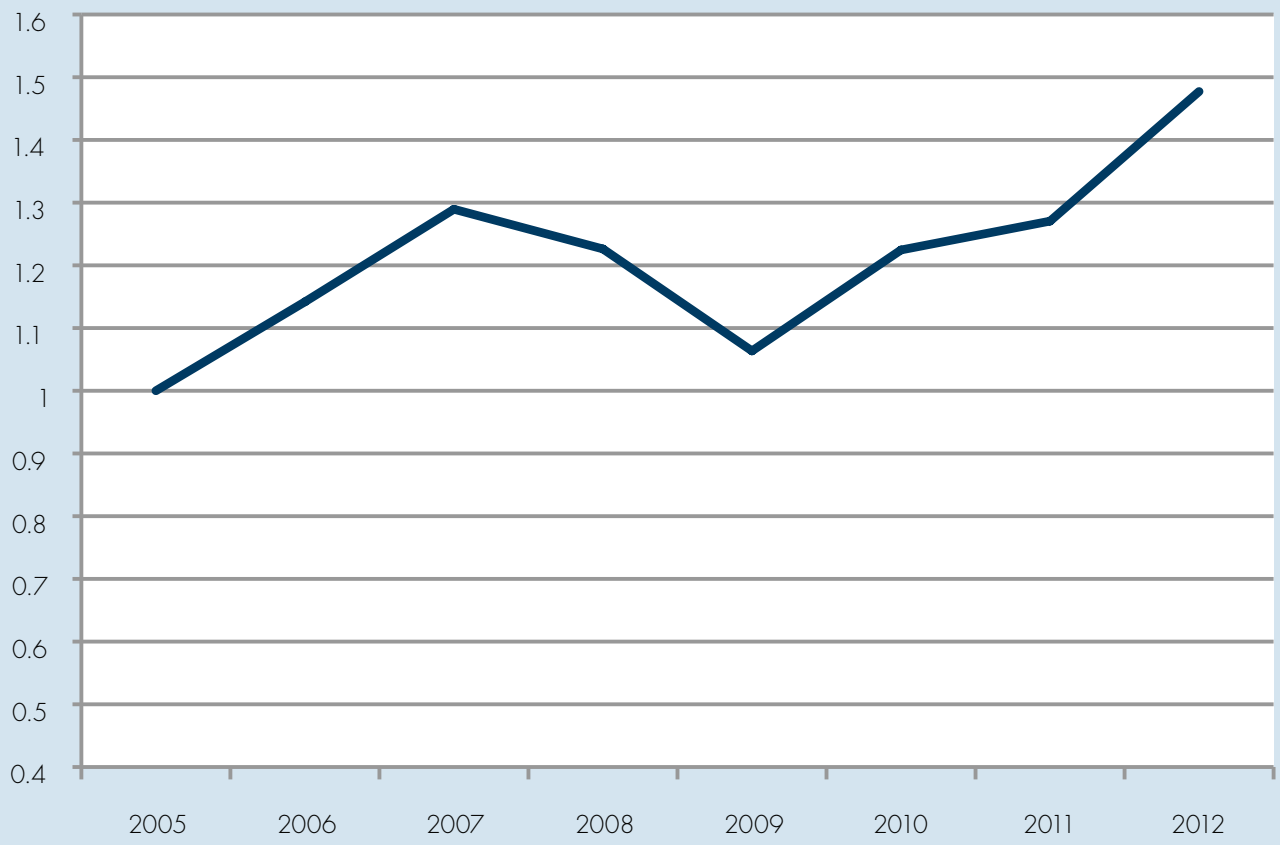
AN ESSENTIAL DISTINCTION

Until now we have focused on transportation infrastructure, and the critical lack of public and private investment in our nation's bridges and roads. However, not all types of growth-enhancing investment are historically low and falling. Another form of investment garnering much attention in today's data-driven economy, broadband investment, is actually quite high.

Certainly investment in maintaining and improving our nation's broadband networks is also an important part of a high-growth strategy. Access to broadband is critical to future economic growth and job creation, and universal adoption is a priority for the Obama administration.[24]

Why is it then that investment in broadband is rising while investment in transportation infrastructure is falling? The essential distinction

FIGURE 4: ON THE RISE: REAL FIXED INVESTMENT IN PRIVATE COMMUNICATIONS EQUIPMENT (2005=1)



Source: BEA, PPI

to make between transportation infrastructure and broadband lies in private sector leadership. Transportation infrastructure is inherently a public good, and as such, is not as financially viable an investment as privately-owned broadband networks.

Whereas the private sector does not invest in transportation infrastructure, it does invest in broadband. In fact, the ongoing revolution in high-speed broadband would not be possible without extensive private sector investment in developing and deploying high-speed networks. Heavy demand for data-driven services has led to constant investment in ever-faster broadband connections, and this demand is forecasted to continue rising.[25] It is the massive private investment in mobile broadband that made the United States the global leader in adoption of 4G/LTE mobile broadband.[26] Private investment is what led to fixed fiber broadband speeds topping out at one gigabit per second.

Further, with the deployment of these ever-faster fixed and mobile broadband networks, private sector investment in broadband continues to rise. One estimate placed private investment in broadband networks totaled $1.2 trillion from 1996 through 2011.[27] A 2013 White House report suggests over $250 billion has been privately

invested in wired and wireless broadband networks since 2009, and estimates $35 billion will be privately invested in 2013 alone.[28]

As PPI has previously documented, telecommunications and cable companies are among the top companies investing in America.[29] In fact, of the top 25 companies on our list for 2013, six were telecommunications and cable companies—AT&T, Verizon, Comcast, Sprint, Time Warner Cable, and CenturyLink. Public documents show they invested in deployment of broadband networks, new equipment, and even public Wi-Fi hotspots. Together, we estimate these 6 companies invested $50 billion over the last year, one-third of the total money invested.

> Whereas the private sector does not invest in transportation infrastructure, it does invest in broadband.

Private investment in broadband is not limited to telecommunications and cable companies. Over the last few years, companies typically seen as hardware and internet companies have also announced their own investments in broadband networks. For example, Google has built out its own fiber broadband networks in 2 cities with speeds of one gigabit per second,[30] and recently announced a contest to build out Google Fiber in another 34 cities.[31] Apple has also recently begun to build out its own broadband network, to obtain more control over its digital content distribution.[32]

We consider investment in communications equipment illustrative of the impressive rise in private investment. We use the investment in communications equipment as a measure of private investment in broadband because a large part of the cost to deploy and operate a broadband network is in the equipment.

Official data shows private fixed investment in communications equipment is up almost 50 percent since 2005, in real terms. As shown in Figure 4, private investment in communications equipment has been continuously rising, and in real terms has more than recovered from the recessionary drop.

BROADBAND INVESTMENT ALONE ISN'T ENOUGH

As crucial as it is, broadband investment alone will not be enough to sustain a high-growth economy. Moreover, it makes little economic sense for governments to compete with the private sector in investing in broadband while allowing their transportation infrastructure to deteriorate.

As with transportation infrastructure, recent empirical research also shows investment in broadband generates positive economic spillovers. However, this recent broadband research also leads to a noteworthy conclusion: that the economic boost resulting from increasing broadband investment is not so much larger than the economic boost from increasing investment in transportation infrastructure. This implies that, at least on a practical level, there is not a strong economic case for the government to invest more heavily in one type of investment over the other.

The greatest economic benefit from investment in broadband comes from the increase in broadband adoption that results from deploying new or faster broadband networks. In a 2011 study the OECD explained the ubiquitous impact broadband can have on the economy:

> Broadband, when combined with ICTs [information and communication technologies], has many channels through which its effects can operate. Direct effects result from investments in the technology and rolling out the infrastructure itself. Indirect effects come from all aspects of economic activity affected by broadband and which drive economic growth and prosperity, e.g. firm efficiency and increased productivity, reduced costs, innovation, globalisation, and new employment opportunities resulting from the gains achieved.[33]

There are significant methodological challenges associated with estimating a broadband multiplier. A 2012 review of research by the International Telecommunications Union (ITU) pointed out that the dynamic and relatively recent nature of the broadband boom makes the data collection necessary for such estimates difficult. The study also suggests that broadband multipliers are not constant, and that they reach a "saturation point" at which the positive marginal impact declines.[34]

We must also note that most of the empirical research connecting broadband to economic growth does so by looking at changes in broadband penetration and adoption. That is, most research measuring the economic impact of broadband is based on the increase in broadband access and adoption that results from broadband network investment, as opposed to the actual building of broadband networks.

Still, the existing range of estimates for the economic impact of broadband are generally positive. A 2009 study of high-income economies by Christine Qiang, Carlo Rossotto, and Kaoru Kimura of the World Bank found an overall sizeable economic impact. Through an examination of data over 1980-2006, the study concluded that a 10 percent increase in broadband penetration led to an additional 1.21 percent in per capita economic output.[35]

> Broadband investment alone will not be enough to sustain a high-growth economy.

A large body of empirical work on broadband multipliers has also focused on measuring the impact of increased broadband access on employment, finding a positive direct and indirect impact. A 2007 landmark study by Robert Crandall, William Lehr, and Robert Litan of Brookings examined broadband penetration data over 2003-2005 and found a positive, causal effect on employment. The change in economic output from increased broadband deployment was not statistically significant; however, as highlighted above, the economic importance of broadband has increased dramatically since the author's data sample ended in 2005.[36]

Another study by Raul Katz of the Columbia Business School in 2009 estimated the direct and indirect jobs stemming from broadband funding in the American Reinvestment and Recovery Act (ARRA), both from broadband network deployment and from the resulting increase in broadband penetration. Using standard input-output analysis, he found broadband stimulus investment could result in 127,800 jobs created over four years. Given a total estimated $6.4 billion in stimulus funding over 2009-2012, this translates to about 20 jobs per $1 million.[37]

The positive economic spillovers of investment in both transportation infrastructure and broadband demonstrate that both worthy investments. But this does not resolve the fundamental question: Investment by whom? Our reading of the evidence suggests that, because private investment in broadband is robust, governments at all levels should concentrate their resources on modernizing transportation infrastructure.

STATE AND LOCAL GOVERNMENT INVESTMENT IN BROADBAND

Many state and local governments nonetheless are interested in investing in broadband. A July 2013 survey of senior managers in state and local government by the Governing Exchange found 70 percent believed broadband networks should be regulated and operated as a public utility—essentially, a public good.[38] Moreover, about 60 percent of the respondents believed the government should play an active role in the deployment of future networks, with almost one-quarter reporting a plan or proposal for a public broadband network was in the works.

According to MuniNetworks, an organization that tracks publicly-owned broadband networks, the number of local governments building out their own broadband networks is rising. The most recent estimates show over 180 local governments

have some publicly-owned fiber service available to residents, while an additional 89 municipalities having complete fiber coverage and 74 municipalities having complete cable coverage.[39] Of these, 40 municipalities have deployed a broadband network with the highest level speed currently available, one gigabit. Most publicly-owned networks currently are located in the Southeast and Midwest regions of the country, and in Washington State. The data also shows clusters of publicly-owned networks were funded as part of a government stimulus projects.

However, the success of publicly-owned broadband networks has been mixed. The upfront cost and time associated with building out a network can be quite high. For example, Chattanooga's high-speed broadband network, which serves a population of 167,000, cost about $300 million.[40] The smaller city of Monticello, Minnesota, found the cost of operating its municipal broadband network too high, and turned it over to a private operator.[41] Given the high fixed costs of deploying, upgrading, and maintaining broadband networks, it may be harder for smaller governments to get positive returns on their investment, especially when private investment is available.

STATE AND LOCAL GOVERNMENTS SHOULD INVEST MORE IN TRANSPORTATION INFRASTRUCTURE

It is certainly understandable that state and local governments are tempted to invest in broadband networks, given the importance of broadband to future economic growth. The emphasis on broadband is surely influenced by the ongoing revolution in high-speed broadband, and the objectives laid out in the 2010 National Broadband Plan.[42]

However, it is clear from today's slow-growth economy that investment in broadband alone is not enough to hasten the pace of recovery. A more balanced economic recovery requires more investment in both traditional transportation infrastructure and broadband.

Yet the formal winding down of ARRA stimulus funding has left state and local governments with constrained budgets. New data from the National Association of State Budget Officers (NASBO) shows total state spending actually fell in 2012 for the first time in 26 years. In 2013, NASBO predicts only a modest increase as states are in the process of rebalancing their budgets post-recession and post-ARRA.[43] The relatively low level of transportation infrastructure funding from the federal government also limits the amount of new projects state and local government can undertake.

> State and local governments should boost their spending on transportation infrastructure if they can.

There are three reasons why state and local governments should boost their spending on transportation infrastructure if they can. First, as previously explained, organizing the provision of public goods is inherently a public rather than a private responsibility. By increasing public infrastructure investment, through additional federal, state, and local funding allocation, state and local governments could actually encourage more private investment in such projects. For example, private investment could be encouraged through greater use of enhanced public private partnerships (PPP).

Second, increased public investment in broadband threatens to crowd out private investment. As PPI has previously documented, private domestic investment in broadband is already strong. If a state or local government chooses to invest in a market that already has private competition, it risks crowding out or displacing potential future private investment. Certainly, this is less of an issue in low-density areas where private broadband investment may be minimal.

Further, by investing in an area that is already privately competitive, state and local governments will be held to the existing pricing structure in

that market. This is potentially problematic if the current price for service is below the break-even amount required to operate the network, as was the case in Monticello.[44] The result could be a reduced economic boost from both the public and private investment—or worse, the public investment could have negative economic returns.

Third, the recent empirical literature shows the return on investment from transportation infrastructure is quite high. The body of independent post-recession analyses we reviewed earlier in this paper indicates a new emerging consensus that investment in roads, bridges, and highways will generate positive economic returns, directly and indirectly. Specifically, these studies find that every $1 invested in transportation infrastructure will boost economic output by $1.5 to $2.

In fact, a 2013 study by J. Bradford DeLong and Laura D. Tyson of the University of California-Berkley found public investment in transportation infrastructure could play a powerful role in stimulating U.S. growth in a post-recession economy. In the study, the authors examined the impact of fiscal spending in 2012 relative to 2007.[45] They concluded that the previous way of thinking, that monetary policy crowds out any benefit of fiscal policy, was no longer applicable in a post-recession U.S. economy. The authors argued that the government could stimulate economic growth through targeted spending, more specifically, on transportation infrastructure:

> "The possibility that the slow recovery will depress future potential output growth through hysteresis effects makes the case even more compelling, particularly for additional government investment spending on infrastructure."[46]

State and local governments, however, cannot repair the current deficit in transportation infrastructure alone. Closing the investment gap will also require increased federal support. Just as public funding could be used to leverage private investment, federal funding could be used to encourage additional state and local investment. Federal assistance for large and ongoing transportation infrastructure projects, for example, mass public transit, could be the deciding factor for state and local governments to invest more now rather than later.

The case is clear for more public investment in transportation infrastructure as part of a high-growth strategy. By addressing the critical need for more transportation infrastructure investment, federal, state and local governments would not only enhance the competitiveness of our nation's business climate and improve the quality of living for its population, but it would do so in a way that generates a positive economic return.

We conclude with a pertinent observation by the great liberal economist, John Maynard Keynes:

> "The most important agenda of the State relate not to those activities which private individuals are already fulfilling, but to those functions which fall outside the sphere of the individual, to those decisions which are made by no one if the state does not make them. The important thing for government is not to do things which individuals are doing already, and to do them a little better or a little worse; but to do those things which at present are not done at all."[47]

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