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Game-Changing Investments for the U.S.

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While Washington remains mired in brinksmanship over the debt ceiling and the budget, a potentially larger problem is building that may constrain growth for decades to come. In late 2012, the Congressional Budget Office [issued a report](#) revising potential gross domestic product downward because of weak investment in the underlying productive capacity of the economy, a slowdown in productivity growth and demographic shifts.

Today G.D.P. in the United States remains nearly \$2 trillion below the prerecession trend and is expanding at an anemic annual rate of about 2 percent, both because of weak aggregate demand and because of the slowdown in the economy's potential growth rate. A resurgence in investment is essential to address both causes of the disappointing recovery and to create jobs.

Annual net private nonresidential fixed investment — a measure of the productive investment and real expansion in physical structures, equipment and software — fell to less than \$100 billion (in 2005 dollars) in 2009 and 2010 from a peak of \$435 billion in 2007. And while it has recovered since then, it remains 40 percent below its prerecession peak.

When measured as a share of G.D.P., this trend is even more worrisome. Net productive investment averaged roughly 4 percent of G.D.P. in the United States in the postwar period until 2000. The share plummeted after the 2001 recession and again after the 2008-9 recession, falling to a historic low of just 0.63 percent of G.D.P. in 2009.

In 2012, after four years of recovery, the share was still below 2 percent of G.D.P., less than half of its 2000 peak of 4.7 percent.

Net real government investment in infrastructure and other forms of productive capacity, including utilities, schools and hospitals, also remains at depressed levels, down 86 percent in 2012 from its 2009 peak. The last time net government investment was as low as it was in 2012 for a sustained period was in

the 1970s, when the economy was less than half its current size. In 2012, the share of such investment in G.D.P. was lower than in any year since 1970.

The decline in net productive investment, both private and public, is a matter of urgent concern for economic growth and job creation. Fixed investment expands capacity and usually improves productivity, particularly when new capital embodies new technologies, in that way generating more income, higher demand and yet more investment. This virtuous circle enables robust job creation as well.

Historical trends show a strong correlation between growth in private investment in equipment and software and growth in private employment. Although correlation does not prove causation, that both are at very low levels today is both a reflection of the anemic recovery and a bad omen for future growth.

Instead of a virtuous circle of strong investment fueling aggregate demand and building future productive potential, the United States economy is caught in a vicious cycle of weak investment, lackluster job creation and a faltering potential growth rate.

There are still two million fewer jobs today than when the recession began five years ago, and the labor force participation rate is at a 34-year low. And the longer the economy operates far below its capacity, the slower the growth in its future capacity as a result of diminished risk-taking, forgone investment and the erosion of the skills base.

But there is some good news on the horizon. New developments in technology and the resulting demand for new processes and products are attracting private investment in some major industries. In oil and gas, for example, new technologies in horizontal drilling and hydraulic fracturing have unlocked huge reserves of natural gas and oil that were previously uneconomic to recover. United States shale gas and oil production has surged, growing [more than 50 percent annually](#) for the last five years.

According to some estimates, nearly \$200 billion was invested in the shale gas industry between 2005 and 2012, with an annual investment growth rate of more than 60 percent. Employment in the oil and gas industry increased by about 200,000 during this period.

Since 2010, another \$50 billion has been invested in the chemicals sector, as companies seek to exploit cheap natural gas for the production of petrochemicals, fertilizers and resins.

Inflows of foreign direct investment in oil and gas extraction and petroleum-related industries have increased from 7 percent of total foreign direct investment flows in the mid-2000s, to approximately 20 percent in recent years. Over all, foreign direct investment in the United States topped \$200 billion in 2012, more than double a decade ago.

Driven by improvements in computing power, cloud computing, sensors and new software tools to retrieve and analyze large data sets, investment in information processing has also surged, reaching \$582 billion in real terms in 2012, nearly double the level a decade ago.

This increase in investment, combined with the explosion of social networking and intensifying privacy and security concerns, has led to major investments by telecommunications and cable companies to meet soaring demand for secure, high-speed fixed and mobile broadband networks.

[A recent study](#) by the Progressive Policy Institute found that telecommunications companies, technology companies and energy companies were the largest sources of private investment in 2012. Foreign companies are increasing their investments in American locations to take advantage of growing opportunities in these and other sectors.

But even more private investment is needed. We estimate that shale, big data and knowledge-intensive manufacturing are game changers for the American economy, capable of generating hundreds of billions of dollars in additional G.D.P. (and millions of jobs) by 2020 in a range of sectors.

In oil and gas, for example, we estimate that the shale boom could reduce America's net energy import bill to zero and raise G.D.P. by \$690 billion by 2020 while generating 1.7 million jobs. Doing so would require a total of \$1.4 trillion in investment.

By 2020, investment to spur the widespread use of big data analytics could increase annual G.D.P. in manufacturing and retail by \$325 billion a year and could produce up to \$285 billion in productivity gains in health care and government services, easing budgetary pressures and releasing resources for investment in other sectors.

The last piece of the growth puzzle is infrastructure investment. The United States has been underinvesting in infrastructure for the last two decades, and the result is plain to see: congested roads, crumbling bridges and delays at airports. The cost of such underinvestment is more than just a test of endurance for commuters. Without modern infrastructure, products can't move quickly and efficiently. Supply chains become more vulnerable, and businesses are more reluctant to invest.

During the last 20 years, infrastructure spending in the United States has averaged about 2.6 percent of G.D.P. — a percentage point less than the amount needed to bring United States infrastructure up to the standards in other advanced economies.

An increase in infrastructure investment by one percentage point of G.D.P., or \$150 billion to \$180 billion a year, on a sustained basis over the next 15 to 20 years, would compensate for past underinvestment. The additional investment would also be a powerful medium-term stimulus to aggregate demand, adding up to \$320 billion or 1.7 percent to annual G.D.P. and creating up to 1.8 million jobs by 2020.

Although additional infrastructure investment would be financed mainly by the government, we estimate that 25 percent to 40 percent could be paid for by the private sector, in part through public-private partnerships, which are widely used in other countries.

In Washington, the political debate is fixated on deficits and debt. But the long-run challenge is one of growth and job creation. According to a [recent commentary by Lawrence Summers](#), data from the most recent [C.B.O. budget projections](#) suggest that a 0.2 percentage point increase in the annual G.D.P. growth rate would eliminate the long-run budget gap.

The long-run growth benefits of game-changing investments in energy, big data analytics and infrastructure are likely to be considerably larger. It's time to shift the focus of the political debate from deficits to growth, and it's time for a significant increase in net productive investment by private and public actors to take advantage of these opportunities.