



## WHY THE BIPARTISAN COMMITMENT TO PUBLIC INVESTMENT SHOULD GO BEYOND MERE RHETORIC

BY JOSH BIVENS

Recent debates over fiscal policy have been marked by many rhetorical commitments to preserving key public investments as budget deficits are reduced in coming years. This commitment is welcome—public investment is a key driver of economic growth in the long term; can create jobs in a near term characterized by excess economic slack; and, as much research suggests, has suffered from underinvestment for decades.

This brief provides data on historical trends in public investments (both overall levels as well as important compositional trends) and briefly reviews the literature on how public investment affects economic growth. It then analyzes how public investment would fare over the next decade under recently proposed budget plans.

Key findings are:

- Capital financed through public spending is an extraordinarily large portion of the nation's productive wealth.
  - Education capital constitutes roughly half of the nation's total capital stock, and much of this is publicly financed.
  - Publicly financed capital accounts for a third of all nonresidential structures and equipment in the U.S. economy.
- Gross public nondefense investment measured as a share of overall gross domestic product (GDP) has slowed markedly in recent decades, from a high of 3.6 percent of GDP in 1965 and 1966 to an average of 2.5 percent of GDP between 1979 and 2011.

- The public capital stock measured as a ratio of the private capital stock shrank from a high of 0.72 in 1974 to a low of 0.58 in 1987–1994, and remained below 0.60 until 2004. After this, a slowdown in private investment and the policy response to the Great Recession led to a substantial increase in this public/private capital stock ratio.
- Most productive public investment is directed by state and local government. In 2011, state and local government public investments constituted 86 percent of total public nondefense investment, roughly in line with its long-run average.
  - On net, state and local public investments are only possible with significant grants from the federal government. Cutbacks at the federal level will hence feed directly into state and local cutbacks (unless state and local governments borrow).
- Various budget proposals released in 2013 have substantially different plans for public investment over the next decade. For example, by 2023, the plan forwarded by Rep. Paul Ryan (R-Wis.), chair of the House Budget Committee, would lower public nondefense investments to a historically small 1.5 percent of GDP, while the Congressional Progressive Caucus “Back to Work” budget would lower public investment to 2.2 percent of GDP.
- Over the 10-year budget window, the Congressional Progressive Caucus “Back to Work” budget invests on average an additional 0.63 percent of GDP annually when compared with the austere Ryan budget. By 2023, this additional investment would produce a public capital stock that is \$1.5 trillion larger, which in turn would generate an additional \$570 billion (or 2.2 percent of 2023 GDP) in national income that year. In short, the differing trajectories of public investment have big potential implications for future incomes.

## Economic background and historical trends

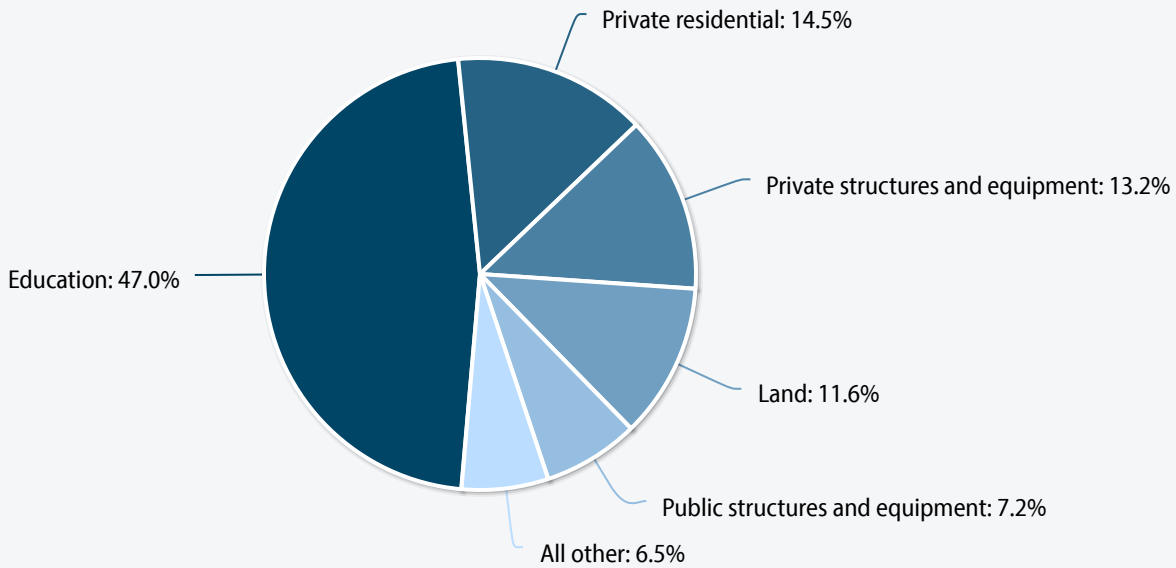
Public investments are an often underappreciated part of the U.S. economy. In 2011, for example, gross public investments totaled 3.2 percent of U.S. GDP—higher than the 2.4 percent accounted for by all private investment in residential structures. Until 2010, the Office of Management and Budget (OMB) routinely published estimates of national wealth, including both public and private capital stock. **Figure A** shows the breakdown of this national wealth by type, reproduced from Bivens (2012a).

Probably the most striking aspect of this accounting is the very large role played by education capital, which accounts for nearly half (47 percent) of national wealth. Given that the large bulk of pre-college education is financed publicly, and that federal and state governments also provide substantial grants for higher education, it is clear that the most important component of the nation’s wealth—human capital—is financed to a significant degree by public investment.

However, public investments are also a significant component of the nation’s physical assets. Removing privately owned residences and associated durable goods, publicly financed investments account for about a third of the nation’s structures and equipment.

Gross public investment rose substantially following World War II, with nondefense investment rising from 1.5 percent of GDP in 1947 to 3.6 percent of GDP at its peak in 1965 and 1966. As depicted in **Figure B**, between 1966 and 1979 gross nondefense public investment fell from 3.6 percent of GDP to 2.6 percent. It essentially remained at this level until the Great Recession and the policy response spurred by it (particularly the American Recovery and Reinvestment Act, or ARRA) temporarily elevated it to 2.8 percent in 2009. Even with the increase, it averaged 2.5 percent between 1979 and 2011.

## Distribution of U.S. national wealth by asset type, 2008



**Note:** The categories in this figure total \$121.6 trillion (in 2008 dollars).

**Source:** OMB (2009), Table 13.5, reproduced from Bivens (2012a)

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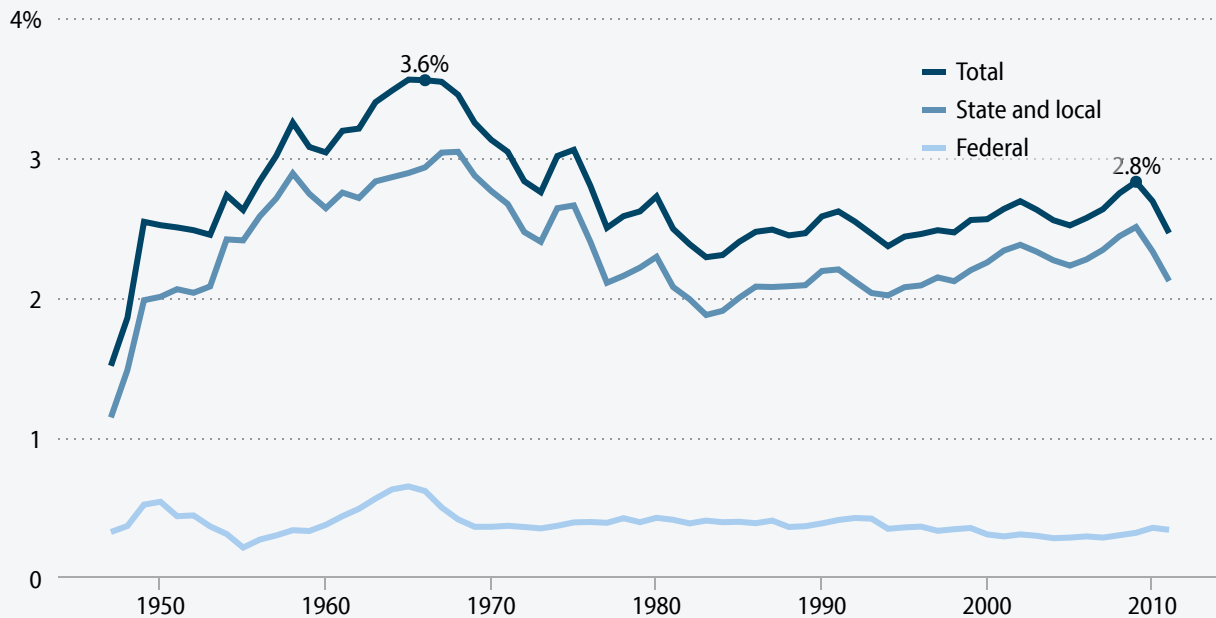
As Figure B shows, the large majority of U.S. nondefense public investment is actually undertaken by state and local governments (86 percent in 2011). However, this vastly understates the federal government’s role in financing this investment. In 2011, for example, grants from the federal government to the states totaled \$468 billion, while total state and local public investments totaled \$318 billion. While not all of these federal grants are earmarked exclusively for public investments, it is clear that state and local governments’ ability to make these investments given their other fiscal responsibilities depends enormously on the stance of federal fiscal policy.

The dramatic reduction in public investment beginning in the late 1960s has been associated with the marked decline in overall (and private) productivity growth that began in the early 1970s. Perhaps because there was a resurgence in private productivity growth in the mid-1990s, the links to public investment have been

largely forgotten. However, recent productivity trends—as hard as they are to interpret given the extraordinary economic slack remaining from the Great Recession—may indicate that this post-1995 productivity recovery is largely over. Given that much of this recovery was associated with high rates of investment in information and communications technology (ICT) equipment, and since ICT investment levels have declined rapidly since the early 2000s, it seems likely that a new driver of productivity growth will have to be found to replace the ICT boom. (See **Figure C** for the rolling five-year average in ICT investment from 1951 to 2011.)

Another useful measure of relative public investment effort scales the size of the public capital stock against the private capital stock. **Figure D** shows the nondefense private and public capital stocks as a share of GDP (rolling five-year averages) and the public/private capital stock ratio (i.e., the public capital stock divided by the

### Gross U.S. nondefense public investment as share of GDP, 1947–2011



Source: Author's analysis of Bureau of Economic Analysis *National Income and Product Accounts* (Table 1.1.5 and Table 5.8.5A)

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private capital stock) from 1951 to 2011. This ratio rose slowly in the period between 1951 and 1974. After hitting a high of 0.72 in 1974, it began a slow and steady decline for decades, bottoming out at 0.58 in 1987–1994 and staying below 0.60 until 2004. The private investment slowdown associated with the Great Recession, along with the impacts of ARRA, have since spurred a substantial increase in this measure, and it reached 0.70 by 2011.

A key (and growing) difference between the public and private capital stocks concerns the composition between structures and equipment. The share of private capital

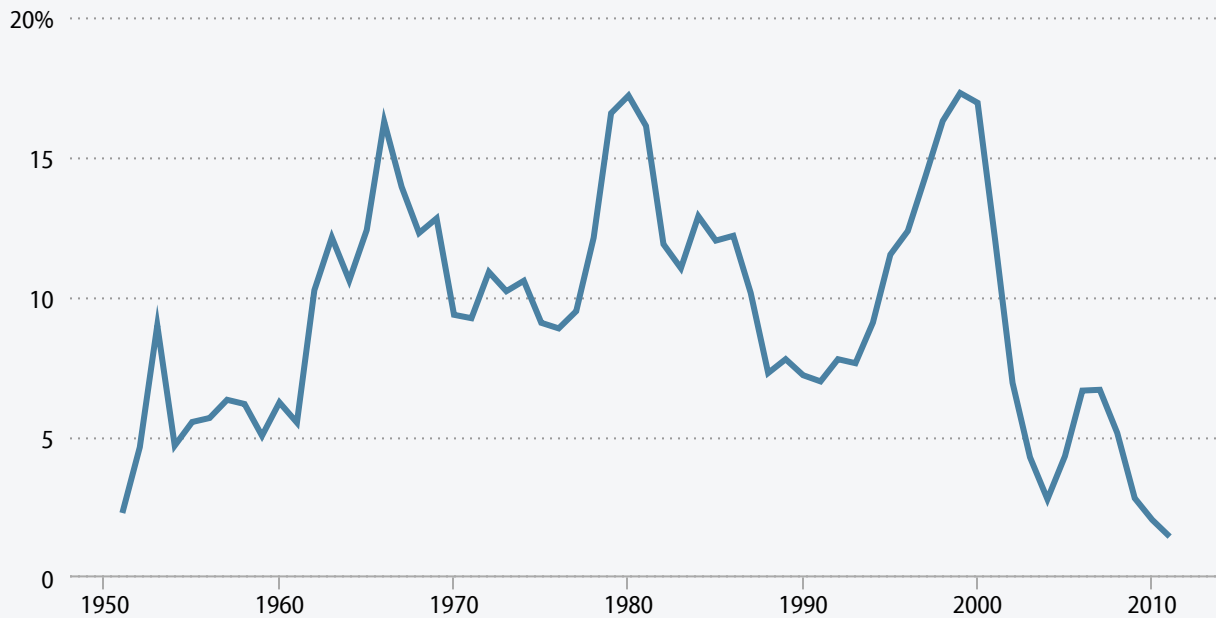
stock accounted for by equipment and software is much higher than the equivalent share in public capital stock (33.7 percent compared with 10.0 percent in 2011), and the trends in this share since 1947 are quite different (see **Figure E**).

In terms of function, public investment is higher in “core infrastructure” areas such as highways and sewer systems than in health and education. In 2011, for example, core infrastructure investments totaled 0.9 percent of U.S. GDP, while public investments in health and education totaled just 0.5 percent. However, as displayed in **Figure F**, the trend has been one of steady convergence

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FIGURE C [VIEW INTERACTIVE on epi.org](#)

## Five-year rolling average annual growth rate of real investment in computer and information-processing equipment, 1951–2011



Source: Author's analysis of Bureau of Economic Analysis *National Income and Product Accounts* (Table 5.5.3)

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between these functions, with core infrastructure investment steadily falling for decades measured as a share of GDP, while health and education investments have steadily risen (albeit from a very small base).

### The economic importance of public investment

Bivens (2012a, 2012b) provides an overview of recent research on the productivity of public investment. In short, the very large estimated rates of return to U.S. public investment that characterized the literature in the early 1990s were cast into some doubt in the second half of the decade, due both to some genuine problems in estimation as well as the recovery in private productivity that was not spurred by increased public investment. However, there has been an underappreciated resurgence of literature beginning in the early 2000s confirming

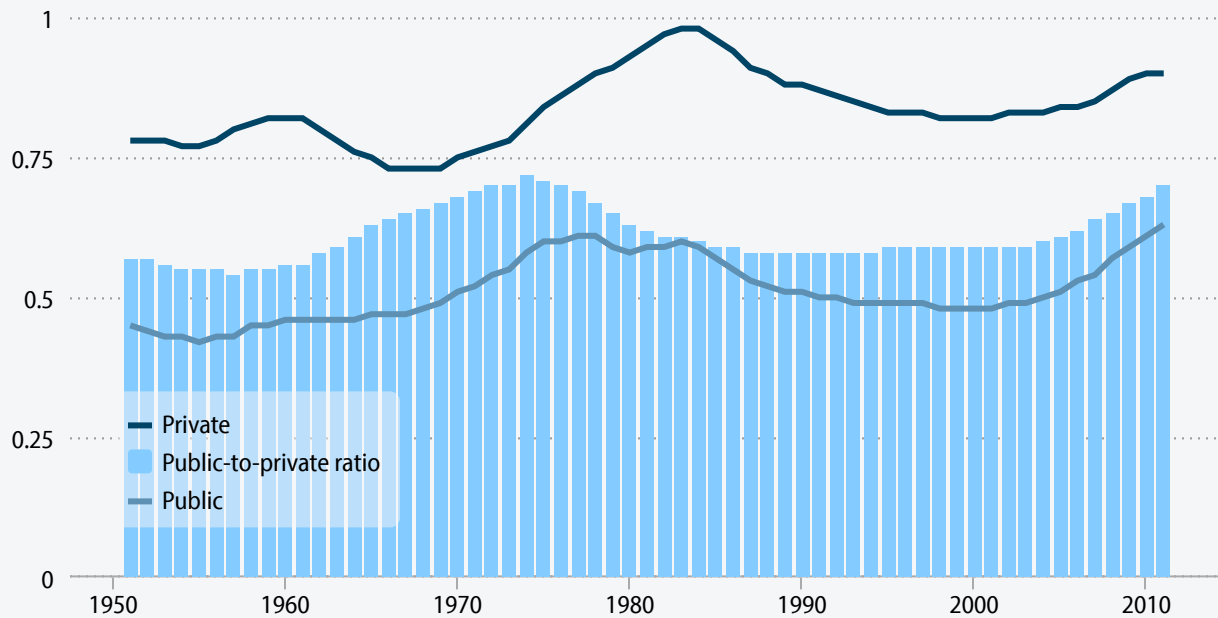
the substantial benefits of public investment, even for advanced countries such as the United States.

Heintz (2010) addresses the econometric problems raised in the first round of the public investment debate in the early 1990s in a careful empirical investigation using U.S. time-series data of the effect of public capital on private productivity. His central finding is that a \$1 increase in the public capital stock results in a \$0.38 increase in private output. He further finds that increased public investment actually crowds-*in* private capital.

It is important to note that these estimates (and others surveyed in Bivens 2012a) can easily understate the economic value of public investment. That is because these estimates measure only the impact of public investment on the *observed market productivity* of private capital. But public investments could well provide substantial economic benefits that do not register as increased private

FIGURE D [VIEW INTERACTIVE on epi.org](#)

## Private and public nondefense capital stock as a share of GDP and public/private capital stock ratio, 1951–2011



Source: Author's analysis of Bureau of Economic Analysis *National Income and Product Accounts* (Table 1.1.5) and *Fixed Assets Accounts* (Tables 7.1.A and 7.1.B)

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productivity. For example, if water treatment investments lead to health improvements, these would absolutely have to be counted in any serious cost-benefit analysis of public investment, yet there would not necessarily be any increase in measured private output or productivity because of them. Further, to the degree that the benefits of public investment (both those measured as increased private output and those missed by such measurements) are more broadly distributed than gains from other economic activity, they can provide substantially larger benefits to low- and moderate-income households than suggested by the aggregate estimates of the impact on private productivity.

### ***Core versus health, education, and green spending***

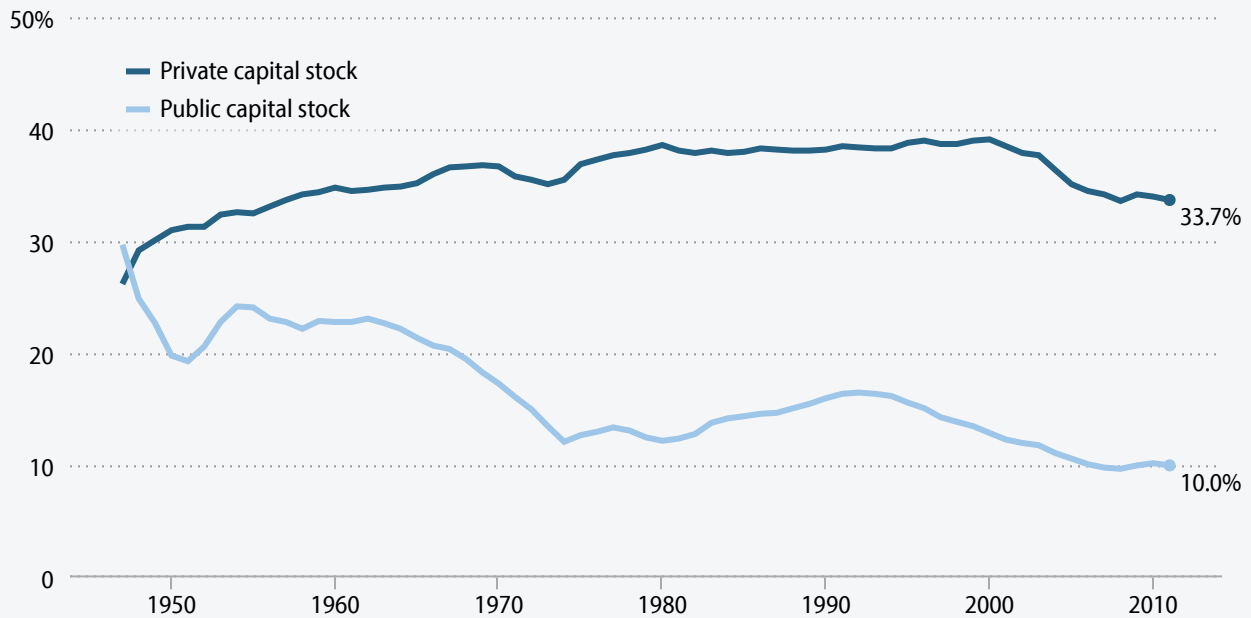
A common finding in the literature estimating the impact of public investment on private productivity is

that core infrastructure investments routinely show the strongest correlation with improved private-sector productivity. Thus, it is concerning that, as discussed previously, the share of public investment devoted to these core infrastructure projects is declining as a share of overall GDP. Further, repeated warnings from the American Society of Civil Engineers about the state of America's infrastructure (they gave the nation's infrastructure a grade of D+ in 2013) reinforce this. In short, a renewed effort to boost infrastructure investment would be most welcome.

However, this effort should not come at the expense of non-core public investments. Bivens (2012b) has reviewed the substantial evidence that now exists on the extraordinary returns (not necessarily measured through increased private-sector productivity) from public efforts in health care, education, and particularly in green investments. Somewhat perversely, green investments could

FIGURE E [VIEW INTERACTIVE on epi.org](#)

## Share of private and public capital stocks accounted for by equipment and software, 1947–2011



Source: Author's analysis of Bureau of Economic Analysis *Fixed Assets Accounts* (Tables 7.1.A and 7.1.B)

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well reduce measured private-sector productivity growth despite providing large economic benefits overall. For example, recent rules passed by the Environmental Protection Agency limit emissions of harmful power plant pollutants. These regulations will require power plants to invest in pollution abatement and control equipment, which should reduce measured productivity in the power generation sector. Yet these regulations' economic benefits are widely recognized to far exceed costs (for a summary of the rule and its economic impact, see Bivens 2011).

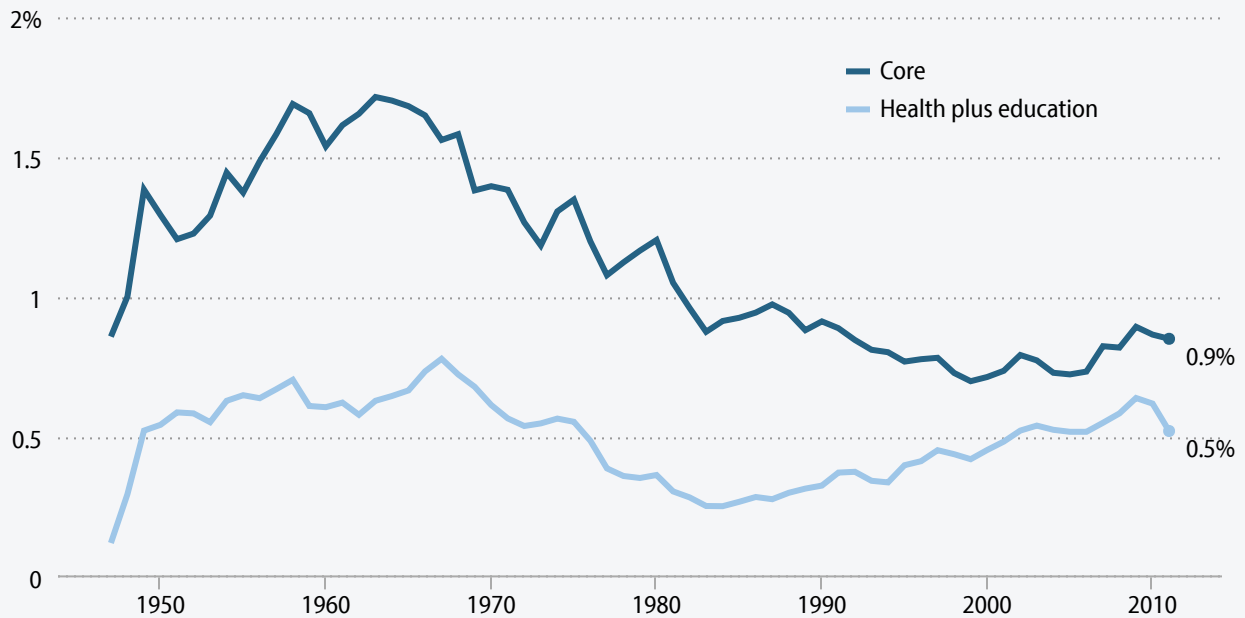
Similarly, it is widely recognized that markets underprice carbon-intensive forms of power production because of the unpriced externality (i.e., negative spillover) imposed by emissions that drive climate change. Until market prices are corrected to price-in this externality (either through regulation, taxes, or other policy measures), investments that boost the share of the nation's capital

stock dedicated to carbon mitigation or abatement will appear inefficient (after all, if such investments were efficient, firms would have already undertaken them). One can see this clearly, for example, in Congressional Budget Office documents that calculate the economic "cost" of legislation to reduce carbon emissions (CBO 2009). Such legislation only has "costs" because it is being compared against an implicit baseline that assumes climate change does not cause economic damage. Given this, *any* investment undertaken to mitigate damages of zero will appear economically inefficient.

### Implications of current budget proposals for the future of public investment

A large majority of physical public investment is financed out of nondefense discretionary spending in the federal budget. Unpublished data provided by the OMB allow

### “Core” infrastructure investments and health and education investments, as a share of GDP, 1947–2011



Note: “Core” infrastructure is highway, transportation, sewer, and water-treatment investments.

Source: Author’s analysis of Bureau of Economic Analysis *National Income and Product Accounts* (Tables 1.1.5, 5.8.5a, and 5.8.5b)

us to match up public investment spending with detailed budget function. Between 2010 and 2012, half of spending undertaken in the nondefense discretionary spending portion of the federal budget was allocated for investment. This compares with just about a third of defense spending and trivial amounts (less than 5 percent) of mandatory spending.

Between 2010 and 2012, nondefense discretionary spending accounted for 19.2 percent of all federal spending, yet accounted for 48.1 percent of all public investment. Defense spending accounted for 19.1 percent of federal spending and 40.4 percent of all public investment, while mandatory spending accounted for 55.9 percent of all federal spending and 11.5 percent of public investment. Interest payments accounted for 5.9 percent of federal spending and zero public investment.

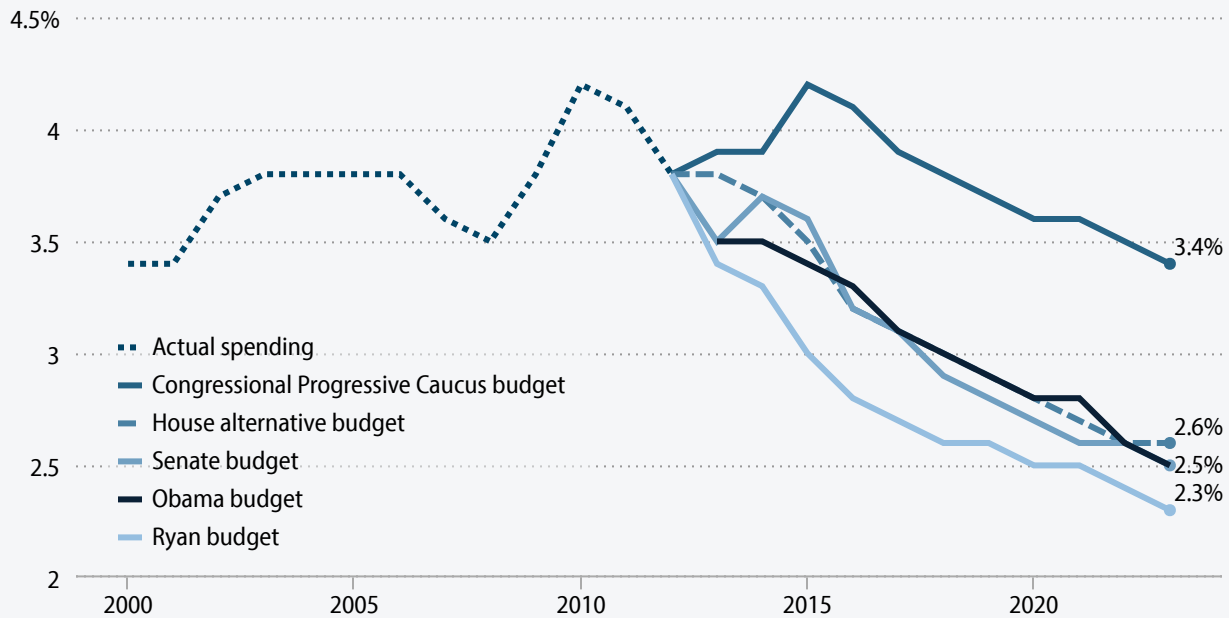
The upshot of this is clear: It would be extremely difficult to honor rhetorical commitments to preserve (let alone expand) public investment if nondefense discretionary (NDD) spending is cut significantly. Yet most current budget proposals do indeed cut NDD spending. **Figure G** shows NDD spending as a share of overall GDP for the House budget plan, shorthand hereafter as the “Ryan budget” after the House Budget Committee chairman, Paul Ryan (Ryan 2013); the House alternative budget put forward by ranking House Budget Committee minority member Chris Van Hollen (Van Hollen 2013); the Senate budget (Murray 2013); the budget proposed by the Obama administration (OMB 2013); and the Congressional Progressive Caucus (CPC) “Back to Work” budget proposal (CPC 2013).

With the exception of the CPC budget, under each plan NDD spending as a share of GDP would reach levels sig-



FIGURE G [VIEW INTERACTIVE on epi.org](#)

## Nondefense discretionary spending as a share of GDP, actual and implied by various budget proposals, 2000–2023



Source: Author's analysis of CPC (2013), Murray (2013), OMB (2013), Ryan (2013), and Van Hollen (2013)

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nificantly below historical precedents by the end of the next decade. This share would reach between 2.3 percent (Ryan budget) to 2.6 percent (House alternative) by 2023. Both the Obama and the Senate budget plans reach NDD levels of 2.5 percent, which would be the lowest level since the OMB NDD data began in 1962. In comparison, under the CPC budget, NDD spending would reach 3.4 percent of GDP in 2023, still slightly below the level that prevailed in the 2000s. Unless NDD cuts were surgical in precision, it is extremely unlikely that cuts of this magnitude could somehow spare public investment (and if only non-investment were cut, it seems that budgets for day-to-day government operations would likely be inefficiently low).

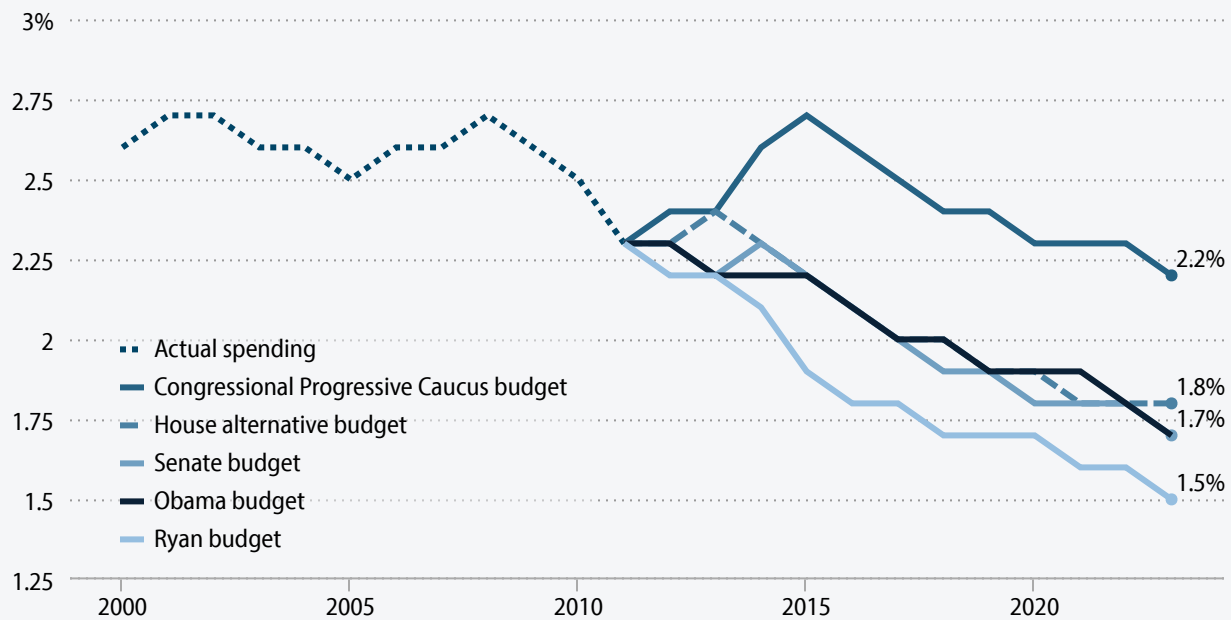
Applying the 2010–2012 ratios of public investment by broad spending category, **Figure H** shows the associated levels of public nondefense investment implicit in each budget. Absent a modest increase in the first years, the

longer trend of NDD spending in each budget except the CPC budget overwhelms other determinants of public investment, and this investment measured as a share of the overall economy reaches historic lows.

Under the Obama, Senate, and House alternative budgets, for example, public investment would reach roughly 1.7 to 1.8 percent of GDP by 2023. This would constitute the lowest level of public investment since 1947—a year in which government spending contracted massively as the demobilization from World War II began. The CPC budget does better, with total public investment reaching 2.2 percent by 2023—but even that level would be slightly lower than the average that prevailed in the years immediately preceding the Great Recession. In essence, the CPC budget does a much better job of slowing the decay of public investment by the end of the period. In contrast, under the Ryan budget, by

FIGURE H [VIEW INTERACTIVE on epi.org](#)

## Actual and implied nondense public investment as a share of GDP in various budget proposals, 2000–2023



Source: Author's analysis of CPC (2013), Murray (2013), OMB (2013), Ryan (2013), and Van Hollen (2013)

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2023 public investment would reach just 1.5 percent of the overall economy.

We can use the research referenced previously to provide a back-of-the-envelope calculation for what this implies for future incomes. Over the 10-year budget window, the “Back to Work” budget invests on average an additional 0.63 percent of GDP annually when compared with the austere Ryan budget. By 2023, this sums to a public capital stock that is \$1.5 trillion larger (roughly 5.7 percent of GDP bigger in that year) under the “Back to Work” budget. This larger public capital stock would in turn generate an additional \$570 billion (or 2.2 percent of 2023 GDP) in income that year. In short, the stakes for future incomes are high when it comes to widely divergent public investment agendas.

### *Investments in early childhood education*

As highlighted in Figure A, a huge portion of public investment that boosts the nation’s capital stock comes in the form of education financing. Human capital (i.e., education) accounts for just under half of the nation’s total stock of productive assets, and much of this—particularly pre-college education—is publicly financed.

The projected amounts of public investment in the competing budget proposals analyzed previously, however, do not count as investment many of the costs associated with education. Thus, these numbers are a conservative estimate of these budgets’ true commitment to public investment, and could perhaps make some budget proposals analyzed look unfairly bad in this regard.

For example, the Obama administration’s budget proposal earmarks \$75 billion over 10 years—financed by an

increase in cigarette taxes—to finance expanded access to early childhood education. The Congressional Progressive Caucus budget would increase education spending by \$234 billion over the next decade, and the CPC has consistently identified early childhood education as a priority investment.

These commitments to early childhood education are most welcome. A wealth of evidence indicates the rate of return to such investments is enormous, with high-quality programs even paying for themselves in strict budgetary terms over the long run (see Lynch 2007 for evidence of this).

Further, this willingness to increase investment at the federal level comes as state support for early prekindergarten has been ravaged by states' efforts to close budget gaps opened by the Great Recession. State prekindergarten funding fell by \$548 million in 2012, and total prekindergarten enrollment rates of four-year-olds stalled for the first time in a decade in 2012. Additionally, spending per pupil fell to its lowest level of the decade—fully 23.5 percent lower than its peak in 2002.

Lastly, it should be noted that even the Obama administration's \$75 billion commitment over the next decade could be ramped up substantially without returns to this early childhood investment diminishing markedly. While Lynch (2007) notes, for example, that the returns to a "targeted" investment in early childhood education (i.e., investment that only provides aid to income-constrained families seeking to enroll children in such programs) are higher than those for a universal program, even the universal program would have extraordinary returns and would more than pay for itself in budgetary terms over the long run. Such a universal program for three- and four-year-olds was estimated by Lynch to cost roughly \$40 billion annually. In short, this is an area of public investment that could absorb much more money and still generate higher returns than nearly all other alternative investments.

## Conclusion

A wealth of research and data suggests that public investments could be an indispensable driver of economic growth in coming years. Policymakers consistently pledge their commitment to preserving or even expanding these investments. Yet the steady trend in public investment has been stagnation or worse. Furthermore, nearly all the budget proposals on offer (with the notable exception of the plan from the Congressional Progressive Caucus) would decrease public investment levels to historic lows by the end of the 10-year budget window (unless public investment is radically increased as a share of overall nondefense discretionary spending).

It is perverse to reduce federal budget deficits—an effort driven by the desire to maintain productive (private) investment effort—by cutting productive (public) investments. Yet this obvious truth has not permeated the budget debate, and purveyors of plans to reduce deficits consistently inflict very large cuts on the nondefense discretionary portion of the budget, where the vast majority of public investment actually resides. We cannot have an honest budget debate if people do not match their rhetorical commitment to public investment with an actual policy commitment.

## About the author

**Josh Bivens** joined the Economic Policy Institute in 2002 and is currently the director of research and policy. His primary areas of research include macroeconomics, social insurance, and globalization. He has authored or co-authored three books (including *The State of Working America, 12th Edition*) while working at EPI, edited another, and has written numerous research papers, including for academic journals. He appears often in media outlets to offer economic commentary and has testified several times before the U.S. Congress. He earned his Ph.D. from The New School for Social Research.

## Acknowledgments

This research was made possible (in part) by grants from the **Peter G. Peterson Foundation** and the **Ford Foundation**. The statements made and views expressed are solely the responsibility of the author.

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