



Middle-Class Societies Invest More in Public Education

A Stronger Middle Class Is Associated
with Higher Levels of Spending on Education

David Madland and Nick Bunker November 2011



Middle-Class Societies Invest More in Public Education

A Stronger Middle Class Is Associated
with Higher Levels of Spending on Education

David Madland and Nick Bunker November 2011

Contents

- 1 Introduction and summary**
- 5 The middle class and public investments**
- 6 A stronger democracy**
- 11 Demand for education and willingness to pay for it**
- 15 Demonstrating that a stronger middle class leads to higher education spending**
- 17 Conclusion**
- 18 Appendix**
- 22 About the authors**
- 23 Endnotes**

Introduction and summary

America's economic future depends in large part on the quality of our nation's public education. Education increases productivity, sparks innovation, and boosts our economic competitiveness. In a globally competitive environment, we can't afford to have a poorly educated workforce.

To boast a world-class public education system requires investments.¹ Alas, we have not invested as much as needed to stay ahead of our international competitors, and the results are clear: Fifteen countries now have higher college graduation rates than us, and our average test scores are lower than those of not just peer countries but also less wealthy places such as Slovenia and Poland.²

Not surprisingly, the American public thinks we should be making greater investments in education, with polls showing strong and growing support for increased spending. Seventy-two percent of Americans support spending more on education today, up from 65 percent in 1985.³ So why have we not been making the investments in education that the public desires and the economy demands?

There are of course many reasons but a key, though often overlooked, piece of the explanation is the decline of the American middle class. Societies with a strong middle class make greater investments in public goods such as education, which helps fuel their future economic success. Because paying for private school imposes a much greater, and sometimes impossible, hardship on middle-class families than it does on the wealthy, middle-class families have a strong incentive to make public schools work. The middle class invests its time and energy in public schools and supports higher levels of spending on education—and especially the taxes necessary to pay for it—than do the rich.

Moreover, people in strong middle-class societies feel they share a similar fate and thus are more willing to make investments that they may not directly benefit from, such as, for example, in education when they do not have school-age children.⁴

Over the past several decades, however, America became less of a middle-class society as the wealthy captured most of the economy's gains. The top 1 percent's share of income rose to 23.5 percent in 2007, the last year before the beginning of the Great Recession, up from 9.12 percent in 1974, while over this same time period, the share of income going to the middle class (defined as the middle 60 percent of the population) fell from 52.2 percent to just 46.9 percent. The share of income going to the bottom 20 percent over this period stayed around 3 percent, declining by less than 1 percentage point.⁵

As the rich pull away from the middle class, the relative political power of the wealthy significantly increases compared to the middle class. This dramatic change in power distorts our political system, leading to not as much investment in the public goods needed to maintain a healthy middle class, including a great public education system. The rich are able not only to purchase ever more political influence but also boost their political power relative to the middle class, which now feels less influential and thus votes less often and gets involved in politics less frequently.⁶ As a result, the views of the American middle class now hold less political weight than they used to.

Because of the decline of the middle class, education spending is lower than it would be otherwise. Indeed, four decades ago the United States ranked second among high-income countries in education spending as a share of GDP—the broadest measure of a country's income level—with only Canada outspending us, according to the World Bank.⁷ In 2008, the most recent year data are available, we ranked 11th—and Canada, whose middle class has also shrunk significantly, dropped to 16th, as countries with stronger middle classes like Sweden and New Zealand edged ahead.

In states across the country, a similar dynamic has played out as well. Since the Great Recession began, most states have cut education spending, yet in those states with a stronger middle class, education spending has not been cut by nearly as much on average.⁸ Moreover, of the five states that cut education spending the most, the middle class in four is weaker than the national average. And of the five states that increased education spending the most, four had stronger middle classes than the average.

To flesh out these observations and help quantify the importance of a strong middle class to making investments in education, we examined in detail educational spending in all 50 states over the past two decades—the entire period for

As the rich pull away from the middle class, the relative political power of the wealthy significantly increases compared to the middle class.

which complete data are available. We find that a weaker middle class is associated with significantly lower levels of education spending, controlling for other factors that affect education spending such as state income levels, the percentage of minorities in a state, and the age distribution of the state. Specifically, we find that a 1 percentage point increase in the share of income received by the middle class is associated with an increase of \$64 per-pupil spending on public school kindergarten-through-12th-grade education.

Our study suggests that if the middle class received the same share of income as it did in late 1960s—approximately 7 percentage points more—then spending per pupil on education would be about \$447 higher today. In a state such as Louisiana, the median state in terms of student population, that would have translated into \$308,839,005 more in education spending during the 2009-10 school year.

Importantly, increased education spending tends to lead to greater levels of achievement.⁹ Many of the factors that boost educational performance require resources. Hiring and retaining good teachers and principals takes money, as do supplies, enrichment programs, small class sizes, and high-quality facilities.

To be sure, there is room to improve the efficiency of our current levels of education spending.¹⁰ But strong middle-class societies also tend to spend government money more efficiently than unequal societies, with less waste, fraud, and abuse, suggesting that the increased educational spending would be likely put to good use. Case in point: Researchers commonly find that in more equal societies, corruption is less prevalent and educational resources are allocated more equitably, ensuring most students have sufficient resources, not just the privileged.¹¹

Additionally, a strong middle class boosts educational attainment through far more than just increased spending.¹² The ways in which a strong middle class leads to better educational outcomes, such as middle-class parents putting pressure on administrators to fire or transfer bad teachers, are described more completely in our companion report, [“The Middle Class Is Key to a Better-Educated Nation.”](#)

Skeptics may argue that over the past several decades as the middle class declined, spending on education generally increased. But we spend more on education now because we are a much richer society. Per capita GDP nearly doubled over the past four decades, adjusting for inflation, increasing from \$26,669 in 1967 to \$46,804 by 2008, providing much greater resources for spending on a range of goods, including education. Research consistently finds that as the income level of

a society increases, it spends more on education.¹³

Skeptics might also note that all Americans, including the wealthy, generally support increased educational spending. They would be correct.¹⁴ But the middle class expresses higher levels of support for spending on education than do the wealthy, suggesting that spending on education would be even greater if the middle class had more political power.

As a result, neither of these points refutes the basic argument of this paper, which is that spending on education is higher when the middle class is stronger.

In the pages that follow, we explore other studies done on the relation between a strong middle class and support for a variety of public investments that benefit the overall strength and well-being of society. We then examine how a strong middle class results in a strong democracy, and consequently in a proclivity for those societies to invest in important public programs such as public education. Our paper then turns to the topic at hand—the demand for a quality public education system and the willingness to pay for it—before presenting our seminal state-by-state analysis of the correlation between a strong middle class and spending on public education per pupil.

In short, this paper argues that a stronger middle class is likely to be good for our nation's educational system. And improving education in the United States would be good for our economy.

The middle class and public investments

A growing body of research finds that societies with a strong middle class make greater investments in public goods that help spur economic growth such as education and infrastructure.¹⁵ New York University economist William Easterly investigated the relationship between income distribution and public investment in a paper entitled “The Middle Class Consensus.”¹⁶ Easterly finds that a stronger middle class, defined as the share of income going to the middle 60 percent of the population, is correlated with high levels of infrastructure and human capital investment.

Other empirical studies find similar results. One study by Torsten Persson and Guido Tabellini, economists at the Institute for International Economics Studies and Bocconi University, finds that the share of income going to households or families in the middle 20 percent of a society is positively correlated with investment in advanced democracies.¹⁷ And Princeton University political economist Jonas Pontusson argues that equality promotes investments in education.¹⁸ Other economists also make the case for a link between income distribution, public investment, and economic growth.¹⁹ Nobel Prize-winning economist Joseph Stiglitz, for example, raises concerns that increased inequality can reduce the ability of a country to take collective action to improve public goods generally.²⁰

Our study expands upon this research in several ways. First, we empirically demonstrate for the first time the relationship between the strength of the middle class and education spending in U.S. states. This is seminal research. Previous research connecting the middle class and higher levels of educational spending never examined this correlation between strong middle classes and state spending on education.

Second, and perhaps most importantly, we develop a rich explanation for how a strong middle class leads to higher levels of education spending in the United States, something previous research has not done. Thus, this paper provides the theory and empirical research for a specific example (education spending in U.S. states) of the more general case that more middle-class societies make greater investments in growth-oriented public goods.

A stronger democracy

A strong middle class fosters better governance by helping ensure government is well run, increasing citizen participation, minimizing factional fighting, and promoting policies for the benefit of all of society rather than special interests. In short, as scholars of government have long observed, when the middle class is strong, you are more likely to get good governance. More than 2,000 years ago, Aristotle argued, “The best political community is formed by citizens of the middle class.” He explained that “those states are likely to be well-administered, in which the middle class is large, and stronger if possible than both the other classes, or at any rate than either singly; for the addition of the middle class turns the scale, and prevents either of the extremes from being dominant.”²¹

Indeed, the middle class boasts a strong interest in promoting foresighted policies and making government work well because the economic opportunities these families strive for are more closely tied to the quality of government than that of the wealthy. The middle class depends more on public services than do the wealthy.²² High-income individuals can more easily opt out of public services because they can readily use private services unavailable to individuals with average income. Lower-quality public schools, for example, are not as much of a concern for the wealthy because they can more easily afford to send their children to private schools.

Even quality roads and bridges are less of an issue for the wealthy when they can take helicopters and private planes. The wealthy can also more easily opt out of a country’s regulations over specific aspects of their life, for instance by making investments and banking abroad, or even moving to another country.²³ In contrast, the middle class is more likely to be forced to make the system generally work.

When the middle class is strong, it has the political power to achieve their goals. Conversely, economic inequality and a weak middle class make the political system imbalanced by giving elites ever more power, which depresses the political participation of the nonwealthy; reduces voting, discussion, and interest in public policy; and creates a government that focuses on special interests rather than the common good.²⁴ James Madison expressed this type of concern when he wrote in 1787 that “the most common and durable source of factions has been the various and unequal distribution of property.”²⁵ In Madison’s view, fractious conflict led to bad government that failed to pursue the public interest.

A long line of modern American political science research finds, not surprisingly, that the wealthy are more likely to get what they want in politics than the middle and lower classes, and that the disproportionate influence of the wealthy causes government and politics to operate differently than it would if the middle class had more power.²⁶

Today our nation is increasingly unequal in wealth, with the rich receiving the lion's share of the economy's gains. The increase in relative power for the rich and decline in relative power for the middle class results in serious political problems in America today, with these political differences becoming so lopsided that the middle class is far less influential than it used to be.

Some of the political success of the rich occurs because of their ability to buy political access and influence. The wealthy have always been able to purchase political influence, but as their incomes pulled away from the middle class over the past several decades, their political contributions overwhelmed those from the middle class.²⁷

In addition, corporate- and trade-association spending on lobbying and donations to political action committees grew rapidly over the past few decades, totally overwhelming any organized contributions by middle-class organizations.²⁸ This spending gives corporations and high-income individuals access to and influence with policymakers that middle-class Americans lack.

But it's not just that the rich are increasingly able to buy political influence with campaign contributions and lobbyists. The excessive political power of the wealthy caused by the lion's share of the economy's gains going to the rich instead of the middle class results in a spiraling effect on politics. As the rich became more powerful, ordinary citizens felt less powerful, causing them to withdraw from politics, which gives the wealthy even more power. Studies consistently find that a weak middle class and high levels of economic inequality profoundly reduce voting, discussion, interest, and other measures of political participation for all but the most wealthy.

In a study of advanced democracies, for example, University of Southern Illinois political scientist Frederick Solt finds that a rise in inequality from low to high levels reduces political discussion by 12 percentage points and voting by 13 percentage points.²⁹ University of Minnesota political scientists Joe Soss and Lawrence Jacobs find that as inequality has increased in the United States, voting fell sharply among middle- and lower-income citizens.³⁰ A study by University of Texas econ-

Today our nation
is increasingly
unequal in wealth,
with the rich
receiving the
lion's share of the
economy's gains.

omists James K. Galbraith and Travis Hale finds that higher economic inequality in a state is associated with lower voter turnout.³¹ And in a study of communities in the United States, Louisiana State University political scientists James C. Garand and Kim Nguyen find “that citizens, in general, who live in communities with lower levels of income inequality are likely to turn out to vote, while at higher levels of income inequality turnout tends to be lower in general and especially for underprivileged citizens, relative to high-income citizens.”³²

Since even in relatively equal societies the nonwealthy are less likely to participate in politics than those with greater economic resources, inequality strongly influences who is politically engaged.³³ Compounding this dynamic is that Americans significantly increased their hours of work over the last several decades—in large part by women moving into the paid workforce—as wages stagnated for the middle class. This overload of work reduces the time and energy Americans have to get politically involved.³⁴

Members of the middle class are aware that they are less relevant politically. Today nearly half of all middle-class Americans think that “people don’t have a say in what the government does,” while several decades ago only a quarter of the middle class felt so powerless, according to our analysis of the National Election Survey, a long-running nationwide academic survey.³⁵ The General Social Survey, also a large, long-running nationwide academic survey, shows similar trends.³⁶

Middle-class Americans are also less likely to join voluntary associations than they were earlier in our history. Work by Harvard political scientists Robert Putnam and Theda Skocpol show how Americans, once lauded by Alexis de Tocqueville as a nation of joiners, are no longer becoming members of groups such as the Elks, the Knights of Columbus, or Parent Teacher Associations.³⁷ These kinds of organizations are key to translating the desires of the middle class into political pressure that motivates elected officials.³⁸

PTAs in particular help parents engage their individual schools. State and local PTAs play an important role in lobbying government on behalf of parents and those interested in the welfare of children. They help keep members informed of issues, alert them to opportune times to take action, and combine the voices and actions of members so that they are felt by politicians.

Putnam’s research shows a decline in PTA membership across the country—a decline that coincided with the decline in strength of the middle class—and he

later noted that membership in independent Parent Teacher Organizations has not replaced the decline in PTA membership.³⁹ PTOs are independent organizations that generally operate within one school, whereas PTAs not only operate at the school level but also form regional groups and a national organization to lobby for the interests of students. Without a strong, organized voice in the education debate, the voices of middle-class Americans are not being heard as loudly as they once were.

Indeed, a host of recent studies find that in the increasingly unequal United States, the views of the rich overwhelmingly prevail.⁴⁰ While these studies have not focused on education policy, their findings are relevant. First, they clearly indicate that when the rich have different views than the rest of the public, the wealthy almost always get what they want.

Second, they provide context for understanding how spending on education could be less than it would be if the middle class were stronger. The preferences of the middle class for even more educational spending take a back seat to the preferences of the wealthy, who also support spending on education but just not as much. That the middle class would not get the level of spending they want is especially likely because, as discussed above, when the middle class loses political power to the wealthy, it can have a spiraling effect, where political losses on one issue cause less interest and support for other issues.⁴¹

A particularly revealing study of the U.S. Senate by Princeton University political scientist Larry Bartels compared senators' floor votes with the views of the constituents on a broad range of issues, including government spending, the minimum wage, civil rights, and abortion, though not education policy.⁴² Bartels found that senators' votes are vastly more responsive to the views of their affluent constituents than to those of the middle class, and were completely disconnected from the views of their poorer constituents. "In almost every instance, senators appear to be considerably more responsive to the opinions of affluent constituents than to the opinions of middle-class constituents, while the opinions of constituents in the bottom third of the income distribution have no apparent statistical effect on their senators' roll call votes," he concluded.

Similarly, Martin Gilens, also a Princeton political scientist, studied 2,000 survey questions on a range of proposed policy changes, including on taxes, government spending, and social issues, and compared the public's preferences with whether government policy actually changed.⁴³ Gilens found that "when Americans with

Without a strong, organized voice in the education debate, the voices of middle-class Americans are not being heard as loudly as they once were.

different income levels differ in their policy preferences, actual policy outcomes strongly reflect the preferences of the most affluent, but bear little relationship to the preferences of poor or middle income Americans.”

Another mechanism that is likely at work is that the weakening of the American middle class also may be changing the way Americans think about investing in public goods. Extreme economic inequality breeds a selfish orientation toward public policy. In contrast, people in societies with a strong middle class believe they share a common fate and are thus more willing to invest in one another. A range of studies find that economic inequality reduces trust between strangers, and that reduced trust results in lower levels of spending on many public programs, especially programs that benefit other people.⁴⁴ As Eric M. Uslaner, a political scientist at the University of Maryland, argues, “economic equality is a strong determinant of trust. And trust leads to policies that create wealth and reduce inequalities.”⁴⁵

Similarly, studies in experimental economics—a new field that explores the way people behave based on detailed analysis of behaviors in experimental settings—show that inequality reduces the willingness of individuals to contribute to a public good. A fundamental sense of fairness drives people to wonder why they should contribute to a public good when they have not seen gains and the wealthy reciprocate by not contributing. In these studies, the rich are afraid they will be exploited by the poor, and the rest of the subjects don’t think the rich will contribute enough. The lack of trust among the subjects in these studies results in underinvestment.⁴⁶ In the next section of our report, we will explore this phenomenon at work in public education.

Demand for education and willingness to pay for it

Though the Great Recession forced some cuts in U.S. education spending, over recent decades combined federal, state, and local education spending increased significantly.⁴⁷ Yet our public schools would benefit enormously from higher levels of spending. Many school buildings need significant and costly repairs, and reducing class size, improving teacher quality, and providing enrichment activities also cost money.⁴⁸ Not surprisingly, studies consistently find that increased spending is associated with higher levels of educational achievement.⁴⁹

Few would deny the benefits of a highly educated, highly skilled workforce. Both common sense and a deep body of research lead us to the inescapable conclusion that a quality education system yields enormous dividends while weaknesses in our system result in enormous losses. One recent report found that if schools in states with lower-than-average performance were brought up just to the national average, the economy would enjoy a \$700 billion boost.⁵⁰

Sadly, we know that America's school system is falling behind. There are any number of statistics one could cite to show how dramatic the needs are. Suffice it to say that one estimate put the economic cost of the gap between U.S. educational achievement and international achievement at anywhere between \$1.3 trillion and \$2.3 trillion a year.⁵¹ Without a quality education system, the United States cannot hope to compete in the 21st century, especially since other countries are ramping up their public investments and gaining on the United States in education, scientific progress, technology, and other critical areas.⁵²

Given all this, it makes sense that the American public strongly supports greater spending on education. In 1985 65.1 percent of Americans supported an increase in education spending. That support increased to 72.1 percent by 2010.⁵³ All evidence indicates that the middle class is more supportive of increased spending on education than the wealthy. To be clear, the wealthy do by many measures support public spending on education; they just don't support it—and especially the taxes necessary to pay for it—as much as the middle class. For the wealthy, increasing education spending is less important than it is for the middle class. As a result,

spending on education has increased over recent decades, but not as much as it would have if the middle class were stronger.

This general tendency of especially strong middle-class support for education can be illustrated with a question from the General Social Survey, which asks about support for increased educational spending. In 1985, the first year the question was asked, 66.4 percent of middle-class respondents supported increasing spending compared to only 59.5 percent of top earners.⁵⁴ Over the years, as support for increased education spending rose overall, the difference between the middle class and top earners remained the same. In 2006, the most recent year this exact question was asked, 83.7 percent of middle-class respondents were in favor of increased education spending whereas 76.9 percent of top earners answered the same way. And critically, the wealthy also have a greater aversion to the taxes necessary to pay for increased spending. This is true specifically on education. On the GSS question discussed above, an answer of “much more” spending was linked to the possibility of requiring tax increases, something 41.6 percent of the middle class supported but only 33.3 percent of top earners wanted.⁵⁵

But even more importantly, it is true about general levels of taxation: The wealthy prefer lower levels than the middle class. If the wealthy are able to secure their preferred level of taxation, which studies suggest that they are, then there is less revenue available to spend on the public’s priorities such as education.

Political science research consistently finds that higher-income individuals, because of their self-interest, tend to be less supportive of government spending and more opposed to taxes.⁵⁶ Indeed, generally the more wealth people have, the greater aversion they have to paying taxes on that wealth, with some obvious exceptions like Warren Buffett. The more money people have, the less need they have for government programs because they can purchase alternatives, such as paying for their children to attend private schools. In addition, because of progressive taxation, people with higher incomes tend to pay proportionately more money in taxes and thus are particularly concerned about taxes.

While there are differences in opinion between middle- and upper-income individuals, differences between the super rich and the middle class are most politically relevant. The super rich (the top 5 percent and especially the top 1 percent and top 0.1 percent) pulled away economically from the middle class in recent decades and thus garnered significantly more political power while the income

Political science research finds that higher-income individuals, because of their self-interest, tend to be less supportive of government spending and more opposed to taxes.

disparity between the modestly wealthy (the top 10 or 20 percent) and the middle class has not changed as much over this time period.

All signs strongly suggest that as incomes rise to extremely high levels, self-interested opposition to government spending and taxes increases, but it is difficult to tease out the precise political views of the super rich. Most polls almost never ask income questions that allow you to tease out who is in the top 0.1 percent, 1 percent, or 5 percent of income earners. And those polls that do allow for such differentiation rarely have a large enough sample of the ultra-wealthy for any substantive analysis. Even capturing the views of the top 10 percent is not commonly done.

Still, two important academic studies that broadly investigate the political attitudes of the very wealthy argue that they are much less supportive of government spending in general, and much more opposed to paying taxes to support government programs.

Research by Northwestern University's Benjamin Page, a dean of public opinion research, and his colleague Cari Lynn Hennessy combines several years of GSS surveys that include very high top-end income questions to investigate the views of the top 4 percent of Americans by income. They find economic elites to be much more opposed to taxes than the middle class. While the authors did not analyze questions about educational spending, they did find that the top 4 percent were "less likely to express concern about economic inequality and less likely to favor government policy to reduce inequality such as more progressive taxation."⁵⁷

Page and Hennessey's data are somewhat dated, so the economic elite's views could possibly have changed, though analysis of the views of the wealthy (that don't separate out the super rich) indicates that they have become even less supportive of government spending and taxes over time, while the views of the middle class have not changed.⁵⁸

Moreover, a more recent study by Princeton University political scientist Martin Gilens looks at how the preferences of the wealthiest 10 percent of Americans differ from those with incomes in the exact middle of the U.S. income range on a wide array of policies. On economic policy issues, Gilens finds that the views of the rich and the middle class "diverge in rational and predictable ways, with the wealthy much less supportive of taxes and government spending." According to Gilens's research, the policy preferences of those in the top 10 percent of income

earners are twice as likely to become the actual policy of the government as those earning incomes in the exact middle of the income range.⁵⁹

As a result, the taxes, which are necessary to pay for increases in education spending, are likely to reflect the views of the wealthy and thus be lower than the ideal point for the middle class and thus provide insufficient revenue for the level of increased spending on education that the middle class desires. In sum, the middle class prefers higher levels of education spending than the wealthy and is more willing to pay for the spending increases with higher taxes if necessary. The more political power the middle class has, the more likely their views will be implemented into policy. So when the middle class has more power, spending on education will be higher.

Demonstrating that a stronger middle class leads to higher education spending

The preceding sections detailed the theoretical channels that connect a strong middle class and education spending. However convincing those arguments might be, the case cannot be fully made without empirical proof.

Using regression analysis, we investigate the relationship between the strength of the middle class and education spending in all 50 states from 1989, the first year for which spending data were available, to 2008, the most recent year for which all data are available.

To examine the relationship between the middle class and educational spending, we analyze state, per-pupil elementary and secondary education spending. We control for a range of variables that have been found to affect education spending levels, including state GDP per capita—the commonly used measure of a state’s income level—and the age and racial distribution of the state and the size of the state economy.⁶⁰ Additional details on our analysis are available in the appendix.

We find a strong and statistically significant relationship between the strength of the middle class and the amount of education spending per student. Our results are similar even when using alternative measures of education spending, such as spending as a share of state GDP, and when using different econometric techniques. This indicates that our results are quite robust.

We find a strong and significant relationship between the strength of the middle class and the amount of educational spending per pupil. The relationship is statistically significant at well beyond the 1 percent level, meaning these results are very unlikely to occur by chance.

Our study suggests that if the middle class received the same share of income as it did in the late 1960s, approximately 7 percentage points more, then per pupil spending on education would be about \$447 higher today. In a state like

Louisiana, the median state in terms of student population, that would have translated into \$308,839,005 more in education spending in the 2009-10 school year.

These findings are consistent with previous research on the relationship between income distribution and public investments other than education spending, for which there are no studies until this seminal report.⁶¹

Moreover, we also find, as expected, that our control variables—the age distribution and racial composition of state populations, the total state population, and state income levels—significantly affect spending levels.⁶² These results are consistent with studies on the determinants of education spending, which generally has not considered the strength of the middle class, providing additional support for our results.

Conclusion

A strong middle class helps increase investment in education by giving a stronger voice to the majority of Americans who want a strong public education system. With education more important than ever to Americans and our country, we need to make sure that our country is living up to its potential by ensuring a robust educational system. By creating a productive workforce, a strong middle class helps create economic growth. In order to make the investments necessary to strengthen our economy, we need to rebuild our middle class.

Appendix

Data

We use elementary and secondary education spending per student as our dependent variable.⁶³ The education spending data from the National Center on Education Statistics cover all 50 states from 1989 to 2008. These data include capital investments but we get very similar results when we use current expenditures. The figures were originally in current year dollars but we deflated them into constant 2009 dollars. We also ran our models using education spending as a share of state GDP as the dependent variable and found broadly similar results.

Our independent variable of interest, the strength of the middle class, is the share of state income going to the second, third, and fourth quintiles of the distribution. These data are from the Current Population Survey and the American Community Survey at the Census Bureau. Note that using a similar definition of the middle class—the share of income going to the middle 20 percent—produced very similar results. These definitions of middle class are similar because they are both affected similarly by the rise in income share going to the top.

The age and racial profiles of states have been found to affect levels of education spending, and thus we include controls for these factors. States with a large amount of school-age children may have more education spending as their parents vote in their children's interest. Older citizens may resist higher education spending as it does not directly benefit them but results in higher levels of taxation. Some previous research found that spending is lower in states with a larger share of those over age 60.⁶⁴ Other research found that support for the public educational system does not decrease as a person ages.⁶⁵ As a result, we do not have a clear expectation for the oldest age groups, though it seems likely that age groups with school-age children would be more likely to support education spending.

Age controls were calculated using population estimate figures from the Census Bureau. We create several age groups and calculate what percent of the population falls in each age range. The groups are those between the ages of 5 and 18, 19 and 29, 30 and 39, 40 and 49, 50 and 59, and those 60 years of age and older.

We control for the racial composition of each state by including the share of the population that is nonwhite. Studies on educational spending show that areas with higher shares of minority residents spend less on education.⁶⁶

Wealthier populations have more to spend on education and thus we control for state income levels, though some previous research on U.S. state education spending ignores this variable.⁶⁷ Similarly, the overall population level of a state may affect education spending as states with a smaller population may feel a greater commonality with one another and be likely to spend more on education, so we include a control for total population.⁶⁸ The real state GDP figures are from the Bureau of Economic Analysis and the state populations figures are from the U.S. Census Bureau.

Because state spending decisions are typically made for future years, we lag the independent variables by one year. We ran regression with contemporaneous independent variables and found very similar results.

Models

We use three different regression models: panel corrected standard errors, or PCSE; state- and year-fixed effects; and a pooled ordinary least squares, or OLS, regression. But our preferred choice is to use PCSE. We believe PCSE is the best choice because the share of income going to the middle class, the independent variable of interest, is relatively slow moving over time.

PCSE was first described by Nathaniel Beck, a political scientist at New York University, and Jonathan Katz, a professor of social sciences and statistics at the California Institute for Technology, and has since become common in the study of political economy.⁶⁹ PCSE is a method to improve the accuracy of estimates when using time-series cross-sectional data. Time-series cross-sectional data are characterized by repeated observations (often annual) on the same fixed political units (usually states or countries), and thus the data are often correlated over time.

As Nathaniel Beck and Jonathan Katz argue, “the inclusion of fixed effects almost always masks the impact of slowly changing independent variables.”⁷⁰ They argue that using fixed effects with time-series cross-sectional data that have slowly changing variables of interest is not just a minor problem but rather can be “profoundly misleading in assessing the impacts of important independent variables. We stress that we are not simply talking about some minor changes in estimation efficiency, but, rather, estimates that are so far off as to be completely useless.”⁷¹

While we prefer PCSE, we show all of our specifications as others have used fixed effects and pooled OLS when investigating similar questions. James Poterba, an

MIT economist, uses both pooled OLS and state- and year-fixed effects regressions in his analysis.⁷² Economists Amy Redhar Harris, of the Congressional Budget Office; William N. Evans, of the University of Notre Dame; and Robert M. Schwab, of the University of Maryland, also use state- and year-fixed effects when looking at education spending at the state level.⁷³ Furthermore, the strength of the middle class was associated with significantly higher levels of spending in all three specifications, providing strong confirmation for our arguments. (see table)

A strong middle class is associated with more education spending

Description of variables*

Variable	Description
Spending per student	K-12 education spending per student
Strength of middle class	The share of income going to the middle 60 percent of the income distribution
Population share of children	The share of the population between the ages of 5 and 18
Population share in 20s	The share of the population between the ages of 19 and 29
Population share in 30s	The share of the population between the ages of 30 and 39
Population share in 40s	The share of the population between the ages of 40 and 49
Population share in 50s	The share of the population between the ages of 50 and 59
Population share above 60	The share of the population that is 60 years old or older
Nonwhite population share	The share of the population that is nonwhite
Log of population	The natural logarithm of total state population
per cap GDP (\$2009)	Real GDP per capita, in \$2009

Summary statistics

Variable	Observations	Mean	Min	Max
Spending per student	1000	10072	5039.7	19948
Strength of middle class	1000	0.4851	0.42	0.5402
Population share in 20s	1000	0.1563	0.1216	0.2036
Population share in 30s	1000	0.149	0.1014	0.2156
Population share in 40s	1000	0.144	0.1001	0.176
Population share in 50s	1000	0.1078	0.0675	0.1569
Population share 60 and above	1000	0.1669	0.0622	0.2351
Nonwhite population share	1000	0.228	0.012	0.7681
Per cap GDP (\$2009)	1000	34199	21531	57559
Log of population	1000	15.04	13.03	17.42

*Population share of children is the omitted age distribution variable.

Results

Spending per student

Panel corrected standard errors

Independent variable	Coefficient	p-value
Strength of middle class	6383	0.000
Population share in 20s	4875	0.224
Population share in 30s	11419	0.000
Population share in 40s	20826	0.001
Population share in 50s	23911	0.000
Population share above 60	9987	0.000
Nonwhite population share	-458	0.060
Per cap GDP (\$2009)	0.307	0.000
Log of population	-131	0.000

R-squared: 0.7356

N: 950

State- and year-fixed effects

Independent variable	Coefficient	p-value
Strength of middle class	2690	0.020
Population share in 20s	-3278	0.187
Population share in 30s	7059	0.018
Population share in 40s	2996	0.423
Population share in 50s	-15912	0.012
Population share above 60	31988	0.000
Nonwhite population share	-131	0.880
Per cap GDP (\$2009)	0.288	0.000
Log of population	-3887	0.000

R-squared: 0.9622

N: 950

OLS

Independent variable	Coefficient	p-value
Strength of middle class	6383	0.006
Population share in 20s	4875	0.275
Population share in 30s	11419	0.004
Population share in 40s	20826	0.001
Population share in 50s	23911	0.000
Population share above 60	9987	0.000
Nonwhite population share	-458	0.178
Per cap GDP (\$2009)	0.307	0.000
Log of population	-131	0.007

R-squared: 0.7356

N: 950

About the authors

David Madland is the Director of the American Worker Project at the Center for American Progress Action Fund. He has a Ph.D. in government from Georgetown University and received his B.S. from the University of California at Berkeley. His dissertation about the political reaction to the decline of the defined-benefit retirement system was awarded the Best Dissertation Award by the Labor and Employment Relations Association. Previously, he worked for Congressman George Miller (D-CA) on the House Committee on Education and the Workforce as well as the Resources Committee.

Nick Bunker is a Special Assistant with the Economic Policy team at the Center for American Progress Action Fund. He works on issues related to economic security and working conditions of the American worker. Nick graduated from Georgetown University with a B.S. in international economics. During his undergraduate career, he was involved with student government and helped found a magazine on international affairs. Nick was an intern at CAP during the 2009-10 academic year. He was born and raised in Norwood, Massachusetts.

Endnotes

- 1 On the importance of education spending to academic achievement, see, for example: David P. Baker, Brian Goesling, and Gerald K. Letendre, "Socioeconomic Status, School Quality, and National Economic Development," *Comparative Economic Review* 46 (3) (2002): 291–312; Adam Gamoran and Daniel A. Long, "Equality of Educational Opportunity: A 40 Year Perspective." In Richard Teese, Stephen Lamb, and Marie Duru-Bellat, eds., *Education and Equity: International Perspectives on Theory and Policy* (New York: Springer, 2006); Claudia Buchman, "Measuring Family Background in International Studies of Education." In Andrew C. Porter and Adam Gamoran, eds., *Methodological Advances in Cross-national Surveys of Educational Achievement*, National Research Council (Washington: National Academy Press, 2002); Bruce Fuller and Prema Clarke, "Raising School Effects While Ignoring Culture?," *Review of Educational Research* 57 (3) (1994): 119–157.
- 2 For international test scores, see: Jessica Shepard, "World education rankings: which country does best at reading, maths, and science?," DataBlog, December 7, 2010, available at <http://www.guardian.co.uk/news/datablog/2010/dec/07/world-education-rankings-maths-science-reading>. For college graduation rates, see: Tamar Lewin, "Once a Leader, U.S. Lags in College Degrees," *The New York Times*, July 23, 2010, available at <http://www.nytimes.com/2010/07/23/education/23college.html>
- 3 Authors' calculations using General Social Survey data. Similar questions in the survey also show increased support for education spending.
- 4 Marc J. Hetherington, *Why Trust Matters: Declining Political Trust and the Demise of American Liberalism* (Princeton, NJ: Princeton University Press, 2004); Eric M. Uslaner, "Trust as a Moral Value." In Dario Castiglione, Jan W. van Deth, and Guglielmo Wolleb, eds., *Handbook of Social Capital* (Oxford: Oxford University Press, 2008); Ben Greiner, Axel Ockenfels, and Peter Werner, "The Dynamic Interplay of Inequality and Trust – An Experimental Study." Working Paper 2173 (CESifo, 2007).
- 5 Data on share of income going to the top 1 percent are from: Thomas Piketty and Emmanuel Saez, "Income Inequality in the United States, 1913 – 1998," *Quarterly Journal of Economics* 118 (1) (2003): 1–39. Data on the share of going to the middle 60 percent and bottom 20 percent are from: "Share of Aggregate Income Received by Each Fifth and Top 5 Percent of Households," available at <http://www.census.gov/hhes/www/income/data/historical/household/index.html> (last accessed October 2011).
- 6 See, for example: Frederick Solt, "Economic Inequality and Democratic Political Engagement," *American Journal of Political Science* 52 (1) (2008): 48–60; Joe Soss and Lawrence R. Jacobs, "The Place of Inequality: Non Participation in the American Polity," *Political Science Quarterly* 124 (1) (2009); James K. Galbraith and Travis Hale, "State Income Inequality and Presidential Election Turnout and Outcomes." Working Paper 33 (The University of Texas Inequality Project, 2006).
- 7 "Public spending on education, total (% of GDP)," available at <http://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS> (last accessed October 2011).
- 8 Data on education spending per pupil are from: Phil Oliff and Michael Leachman, "New School Year Brings Steep Cuts in State Funding for Schools" (Washington: Center on Budget and Policy Priorities, 2011). The data on the strength of the middle class are from the U.S. Census Bureau.
- 9 See, for example: Baker, Goesling, and Letendre, "Socioeconomic Status, School Quality, and National Economic Development"; Gamoran and Long, "Equality of Educational Opportunity"; Buchman, "Measuring Family Background in International Studies of Education"; Fuller and Clarke, "Raising School Effects While Ignoring Culture?"
- 10 For a discussion of the current efficiency of educational spending in the United States, see: Ulrich Boser, "Return on Educational Investment: A District-by-District Evaluation of U.S. Educational Productivity" (Washington: Center for American Progress, 2011). On the possible decreasing marginal returns of education spending, see: Ming Ming Chiu and Lawrence Khoo, "Effects of Resources, Inequality, and Privilege Bias on Achievement: Country, School, and Student Level Analyses," *American Educational Research Journal* 42 (4) (2005): 575–603.
- 11 On corruption and waste, see: David Callahan, *The Cheating Culture: Why More Americans Are Doing Wrong to Get Ahead* (New York: Houghton Mifflin Harcourt, 2004); Eric M. Uslaner, *Corruption, Inequality, and the Rule of Law: The Bulging Pocket Make the Easy Life* (New York: Cambridge University Press, 2008); Alberto Chong and Mark Gradstein, "Inequality and Institutions," *The Review of Economics and Statistics* 89 (4) (2007): 454–465; Karla Hoff and Joseph Stiglitz, "After the Big Bang? Obstacles to the Emergence of the Rule of Law in Post-Communist Societies," *American Economic Review* 94 (3) (2004): 753–763; Konstantin Sonin, "Why the rich may favor poor protection of property rights," *Journal of Comparative Economics* 31 (4) (2003): 715–731; Philip Keefer and Stephen Knack, "Polarization, Politics and Property Rights: Links Between Inequality and Growth," *Public Choice* 111 (2) (2002): 127–154. On more equitable education spending, see: Chiu and Khoo, "Effects of Resources, Inequality, and Privilege Bias on Achievement"; Gamoran and Long "Equality of Educational Opportunity."
- 12 David Madland and Nick Bunker, "Rebuilding the Middle Class Is Key to Improving Educational Outcomes" (Washington: Center for American Progress Action Fund, 2011); Baker, Goesling, and Letendre, "Socioeconomic Status, School Quality, and National Economic Development"; Richard D. Kahlenberg, *All Together Now: Creating Middle-Class Schools through Public School Choice* (Washington: Brookings Institute Press, 2001); Heather Schwartz, "Housing Policy is School Policy: Economically Integrative Housing Promotes Academic Success in Montgomery County, Maryland" (Washington: The Century Foundation, 2010).
- 13 Chiu and Khoo, "Effects of Resources, Inequality, and Privilege Bias on Achievement"; Chudgar and Luschei, "National Income, Income Inequality, and the Importance of Schools."
- 14 Authors' analysis of General Social Survey data. The majority of respondents support increasing education spending regardless of income level.
- 15 David Madland, "Growth and the Middle Class," *Democracy: A Journal of Ideas* 20 (2) (2011): 16–22; Guido Tabellini and Alberto Alesina, "Voting on the Budget Deficit," *American Economic Review* 80 (1) (1990): 37–49; Guillermo A. Calvo and Allan Drazen, "Uncertain Duration of Reform: Dynamic Implications." Working Paper 5925 (National Bureau of Economic Research); Torsten Persson and Guido Tabellini, "Is Inequality Harmful for Growth?," *American Economic Review* 84 (3) (1994): 600–621.
- 16 William Easterly, "The Middle Class Consensus and Economic Development," *Journal of Economic Growth* 6 (4) (2001): 317–335.

- 17 Persson and Tabellini, "Is Inequality Harmful for Growth?"
- 18 Jonas Gunnar Pontusson, *Inequality and Prosperity: Social Europe versus Liberal America* (Ithaca, NY: Cornell University Press, 2005).
- 19 Solt, "Economic Inequality and Democratic Political Engagement"; Joe Soss and Lawrence R. Jacobs, "The Place of Inequality: Non Participation in the American Polity," *Political Science Quarterly* 124 (1) (2009).
- 20 Joseph E. Stiglitz, "Of the 1%, by the 1%, for the 1%," *Vanity Fair*, May 2011, available at <http://www.vanityfair.com/society/features/2011/05/top-one-percent-201105?currentPage=all>.
- 21 Alexander Hamilton, James Madison, and John Jay, *The Federalist Papers* (Seattle, WA: CreateSpace, 2010).
- 22 Anecdotaly, the wealthy are aware that they can buy protection from declining public infrastructure. For example, the luxury car company Audi ran full-page ads in *The New York Times* stating, "The roads are underfunded by \$450 billion. With the right car you may never notice." See: Dianne Stewart, "Buy the Right Car and You May Never Notice the Budget Holes," Policy Shop, September 19, 2011, available at <http://www.policyshop.net/home/2011/9/19/buy-the-right-car-and-you-may-never-notice-the-budget-holes.html>.
- 23 The super rich have become more and more detached from their compatriots. See: Chrystia Feeland, "The Rise of the New Global Elite," *The Atlantic*, January/February 2011, available at http://www.theatlantic.com/magazine/archive/2011/01/the-rise-of-the-new-global-elite/83437/?single_page=true.
- 24 See for example, Frederick Solt, "Economic Inequality and Democratic Political Engagement," *American Journal of Political Science* 52 (1) (2008): 48-60.
- 25 Hamilton, Madison, and Jay, *The Federalist Papers*.
- 26 As E.E. Schattschneider, the former president of the American Political Science Association, memorably wrote in a 1960 book: "the flaw in the pluralist heaven [the idea that inequality doesn't fundamentally effect government] is that the heavenly chorus sings with a strong upper-class accent." See: E.E. Schattschneider, *The Semisovereign People: A Realist's View of Democracy in America* (Orlando, FL: Holt, Rinehart, and Winston, 1960). Other foundational 20th-century political scientists—from Peter Bachrach and Morton S. Baratz, who studied Baltimore City politics, to John Gaventa, who examined Appalachian politics—make similar arguments for how economic inequality and a weak middle class give disproportionate political power to the wealthy, depress the political participation of the nonwealthy, and fundamentally alter what government does and how it does it. See: Peter Bachrach and Morton S. Baratz, *Power and Poverty: Theory and Practice* (New York: Oxford University Press, 1970); John Gaventa, *Power and Powerlessness: Quiescence and Rebellion in an Appalachian Valley* (Champaign, IL: University of Illinois Press, 1980).
- 27 See, for example: "Top Individual Contributors," available at <http://www.opensecrets.org/bigpicture/topindivs.php?cycle=2010>; "Donor Demographics" available at <http://www.opensecrets.org/bigpicture/donordemographics.php?cycle=1990>.
- 28 According to the Center for Responsive Politics, in the 2010 electoral cycle, corporate interests spent more than \$277 million on PAC donations, compared to \$47 million spent by labor-related spending, the largest source of organized support for middle-class citizens. Even more shocking is the amount spent on lobbying. Corporations and industry trade associations spent \$2.8 billion on federal lobbying during 2010.
- 29 Solt, "Economic Inequality and Democratic Political Engagement"; Soss and Jacobs, "The Place of Inequality." In addition, our own state-by-state—if simplistic—analysis finds a strong, positive relationship correlation between voter turnout and the income share going to the middle 60 percent of the population. We found a positive correlation significant at the 1 percent level. The turnout data is from the 2008 presidential election and is from "Voter Turnout," available at http://elections.gmu.edu/voter_turnout.htm. The middle-class shares are from the American Community Survey and the Current Population Survey.
- 30 Soss and Jacobs, "The Place of Inequality."
- 31 Galbraith and Hale, "State Income Inequality and Presidential Election Turnout and Outcomes."
- 32 Kim Nguyen and James Garand, "Income Inequality and Voter Turnout in the American States: 1960 – 2004," presented at American Political Science Association 2008 Annual Meeting.
- 33 Sidney Verba, Kay Lehman Schlozman, Henry E. Brady, *Voice and Equality: Civic Volunteerism in American Politics* (Cambridge, MA: Harvard University Press, 1995).
- 34 Robert Putnam, *Bowling Alone: The collapse and revival of American community* (New York: Simon and Schuster, 2001). In other writings, Putman has also highlighted the role of increased work hours for mothers has had on the decline of PTA membership. See: Robert Putnam, "Bowling Alone: America's declining social capital," *Journal of Democracy* 1 (6) (1995): 65–78.
- 35 "People Don't Have a Say in What the Government Does 1952 – 2008," available at http://www.electionstudies.org/nsguide/toptable/tab5b_2.htm (last accessed October 2011).
- 36 Authors' calculations of General Social Survey data indicates that those with higher incomes are more likely to believe that they can affect government decisions than the middle class, and the difference has increased over time.
- 37 Theda Skocpol, *Diminished Democracy: From Membership to Management in American Civic Life* (Norman, OK: University of Oklahoma Press, 2003); Putnam, *Bowling Alone*.
- 38 Jacob Hacker and Paul Pierson, *Winner-Take-All Politics: How Washington Made the Rich Richer – and Turned Its Back on the Middle Class* (New York: Simon and Schuster, 2010).
- 39 Robert Putnam, "Bowling Alone: The Book Club," *Slate*, June 14, 2000, available at <http://www.slate.com/id/2000177/entry/1005513/>.
- 40 Lawrence Jacobs and Theda Skocpol, "American Democracy in an Era of Rising Inequality." In Lawrence Jacobs and Theda Skocpol, eds., *Inequality and American Democracy: What We Know and What We Need to Learn* (New York: Russell Sage Foundation, 2005); Lawrence Jacobs and Benjamin I. Page, "Who Influences U.S. Foreign Policy?," *American Political Science Review* 99 (1) (2005): 107–123; Hacker and Pierson, *Winner-Take-All Politics*.
- 41 See, for example: Soss and Jacobs, "The Place of Inequality"; Peter Bachrach and Morton S. Baratz, "Two Faces of Power," *The American Political Science Review* 56 (4) (1962): 947–952; Gaventa, *Power and Powerlessness*.
- 42 Larry Bartels, "Economic Inequality and Political Representation." In Lawrence Jacobs and Desmond King, eds., *The Unsustainable American State* (New York: Oxford University Press, 2009).
- 43 Martin Gilens, "Inequality and Democratic Responsiveness," *Public Opinion Quarterly* 69 (5) (2005): 778–796.
- 44 Marc J. Hetherington, *Why Trust Matters: Declining Political Trust and the Demise of American Liberalism* (Princeton, NJ: Princeton University Press, 2004).

- 45 Eric M. Uslaner, "Trust as a Moral Value." In Dario Castiglione, Jan W. van Deth, and Guglielmo Wolleb, eds., *Handbook of Social Capital* (Oxford: Oxford University Press, 2008).
- 46 For good literature review on the subject, see: Ben Greiner, Axel Ockenfels, and Peter Werner, "The Dynamic Interplay of Inequality and Trust – An Experimental Study." Working Paper 2173 (CESifo, 2007).
- 47 Terence Chea, "Schools Struggle to Recover Amid Years of Education Budget Cuts," Associated Press, May 25, 2011, available at http://www.huffingtonpost.com/2011/05/25/education-budget-cuts_n_866963.html; "Current expenditures per pupil in fall enrollment in public elementary and secondary schools: Selected years, 1961 – 1962 through 2007 – 2008," available at <http://nces.ed.gov/fastfacts/display.asp?id=66> (last accessed October 2011).
- 48 Mary Filardo, "Good Buildings, Better Schools: An economic stimulus opportunity with long-term benefits" (Washington, Economic Policy Institute, 2008); Dominic J. Brewer and others, "Estimating the cost of national class size reductions under different policy alternatives," *Educational Evaluation and Policy Analysis* 21 (2) (1999): 179–192.
- 49 Baker, Goesling, and Letendre, "Socioeconomic Status, School Quality, and National Economic Development"; Gamoran and Long, "Equality of Educational Opportunity"; Buchman, "Measuring Family Background in International Studies of Education"; Fuller and Clarke, "Raising School Effects While Ignoring Culture?"
- 50 McKinsey & Company, "The Economic Impact of the Achievement Gap in America's Schools" (2009).
- 51 Ibid.
- 52 Diana Epstein, "Investing in Education Powers U.S. Competitiveness" (Washington: Center for American Progress, 2011). Edward Glaeser, "Republicans Must Embrace Education, Not Tax Cuts," Bloomberg, October, 24, 2011, available at <http://www.bloomberg.com/news/2011-10-25/republicans-must-embrace-education-not-tax-cuts-edward-glaeser.html>.
- 53 Authors' calculations using NCES data from 2008 survey.
- 54 Authors' analysis of GSS data. When analyzing the data, we use the smallest-possible grouping of top earners as our "high-income earners." Due to top coding in the data, this group is as large as 10 percent of respondents but can be as small as 3 percent.
- 55 Authors' analysis of GSS data.
- 56 Benjamin I. Page and Cari Lynn Hennessy, "What Affluent Americans Want from Politics," Prepared for delivery at the annual meeting of the American Political Science Association, 2010.
- 57 Ibid.
- 58 Unpublished manuscript by Madland.
- 59 Gilens, "Inequality and Demographic Responsiveness."
- 60 See appendix for more details on these variables and their justification for inclusion in the model.
- 61 Easterly, "The Middle Class Consensus and Economic Development"
- 62 As expected, the share of the population that is nonwhite is found to have a statistically significant and negative relation with the total amount of spending and spending per student. Similarly, as expected, states with smaller populations tend to spend more per student, suggesting that knowing or sharing common experiences with other state residents leads to higher levels of spending. Finally, as expected, our results also show a strong relationship between the age profile of a state and education spending, with a greater share of residents in age groups likely to have school-age children (30- and 40-year-olds) leading to higher levels of spending. (Note that unlike some previous research, our results show a significant positive correlation between the share of the population over 60 and education spending, though previous research did not control for other age groups. Other research that does control for other age groups, however, produces similar results as ours.) See, for example: James H. Poterba, "Demographic Structure and the Political Economy of Public Education," *Journal of Policy Analysis and Management* 16 (1) (1997) 48–66; Amy Rehder Harris, William N. Evans, and Robert M. Schwab, "Education spending in an aging America," *Journal of Public Economics* 81 (2001): 449–472.
- 63 When we ran a simple bivariate regression between spending per student and middle-class share, the relationship was negative. The correlation becomes positive, however, once GDP per capita is added as a control.
- 64 Poterba, "Demographic Structure and the Political Economy of Public Education"; Harris, Evans, and Schwab, "Education spending in an aging America."
- 65 Eric Plutzer and Michael Berkman, "The Graying of America and Support for Funding the Nation's Schools," *Public Opinion Quarterly* 69 (1) (2005): 66–86; Christopher D. Clark and others, "Willingness to Fund Public Education in a Rural, Retirement Destination Country," *Journal of Research in Rural Education* 24 (6) (2009): 1–16.
- 66 Poterba, "Demographic Structure and the Political Economy of Public Education."
- 67 Baker, Goesling, and Letendre, "Socioeconomic Status, School Quality, and National Economic Development"
- 68 David Dreyer Lassen and Søren Serritzlew, "Jurisdiction Size and Local Democracy: Evidence on Internal Political Efficacy from Large-scale Municipal Reform," *American Political Science Review* 105 (2) (2011): 238–258.
- 69 Nathaniel Beck and Jonathan N. Katz, "Nuisance vs. substance: specifying and estimating time-series-cross-section models," *Political Analysis* 6 (1996): 1–36; Nathaniel Beck, "TIME-SERIES-CROSS-SECTION DATA: What Have We Learned in the Past Few Years?," *Annual Review of Political Science* 4 (2001): 271–293.
- 70 Nathaniel Beck and Jonathan N. Katz, "Throwing Out the Baby With the Bath Water: A Comment on Green, Kim and Yoon," *International Organization* 55 (2) (2001).
- 71 Ibid.
- 72 Poterba, "Demographic Structure and the Political Economy of Public Education."
- 73 Harris, Evans, and Schwab, "Education spending in an aging America."

The Center for American Progress Action Fund transforms progressive ideas into policy through rapid response communications, legislative action, grassroots organizing and advocacy, and partnerships with other progressive leaders throughout the country and the world. The Action Fund is also the home of the Progress Report and ThinkProgress.

Center for American Progress Action Fund

