

**SHIFTING BOUNDARIES AND
SHADY BORDERS: A CALL FOR
RESEARCH ON THE POLITICAL
ECONOMY OF EDUCATION
REFORM**

Jane Hannaway

McCourt School of Public
Policy
Georgetown University
Washington, DC 20057
jh1785@georgetown.edu

INTRODUCTION

In 2014, the Association for Education Finance and Policy (AEFP) held its thirty-ninth annual conference in San Antonio, Texas. The relevance of the host city for much of the research presented at the conference was not lost on most members.

A little over forty years ago the Supreme Court of the United States ruled in *San Antonio v. Rodriguez* [411 U.S. 1 (1973)] that education is not a fundamental right protected by the U.S. Constitution. Parents had brought suit arguing that basing school financing on property wealth resulted in the unequal provision of education, presumably a fundamental right. The Supreme Court decision was a close one, at 5 to 4. If the decision had gone the other way, we would likely now have a national education system. Instead, what evolved is a complex system of education policy making, often described as a “marble cake federalism,” where different levels of government intermingle in different ways in policies and programs or as a “Rube-Goldberg-like” machine where complicated hoops and hurdles are required to produce relatively simple policy inputs.

Something else has changed in the last forty years. The United States led the world throughout the twentieth century in expanding access to secondary and college education (Goldin and Katz 2000; Goldin 2001) but it is no longer the leader in access—nor for that matter does

it lead in performance. Relative to other Organisation for Economic Cooperation and Development (OECD) countries, U.S. performance on the latest Programme for International Student Assessment (PISA 2012) is middling at best, and secondary school completion is similar. And the rest of the world is fast catching up with the United States in college completion. In 1995, the United States ranked first in college graduation among OECD countries. Today, it ranks 19th out of the 28 countries studied (OECD 2014).

In addition, the United States—traditionally seen as the land of opportunity—has relatively low educational mobility: The fraction of young adults in the United States with education levels lower than their parents is higher than the OECD average. Indeed, out of the 21 countries included in the analysis, the United States ranks 18th (OECD 2014). Lack of social mobility weakens social cohesion and trust in a society's institutions.

Education ranking of countries is more than a simple top ten list. Education quality is a key ingredient for a country's economic growth (Nelson and Phelps 1966; Hanushek and Woessmann 2007). Major national economic policy leaders are increasingly stressing the importance of education for the country's economic well-being (e.g., Bernanke 2007). President Obama warns that “Countries that out-educate us today will out-compete us tomorrow” (Obama 2011). Indeed, he has called education “the economic issue of our time” (Obama 2010).

In a speech on inequality, Federal Reserve Board Chair Janet Yellen (2014) identifies education as a key “cornerstone” of opportunity affecting intergenerational mobility. She points out that, unlike most other advanced countries, students from low income families in the United States often receive less public education support than students from more advantaged families because school financing is heavily based on subnational (state and local) taxes. The old problem associated with the Rodriguez case emerges again, but perhaps in a broader way. Most of our economic competitors have not only more equal funding but also national systems of education where both education policies, including performance standards and funding, are largely set for the country as a whole.

The focus of this essay, as the title suggests, is to advocate for new and renewed efforts in analyzing the dynamics behind shifts in education governance in the United States and their effects on national policies, practices, and performance going forward.

Much of the work presented at AAFP conferences evaluates education policies and practices using experimental methods, with random assignment, or rigorous quasi-experimental strategies, such as regression discontinuity designs. This work will, and should, always be a large and important part of AAFP's portfolio. It provides policy makers with valuable information about

the likely productivity effects of different courses of action. The extent and ways in which policy makers and other influential parties respond to such information, however, is complicated. And the complications are also worth studying.

In short, I am suggesting that it may serve us, and the field, well to broaden our horizon. In some sense, I suggest we revisit some of our earlier roots, and expend greater effort examining cross-level institutional incentives and constraints that affect federal, state, and local policy making, as well as the resources and political pressures at different levels that shape policies and foster or inhibit productive education change. This is a call for more research on the political economy of education policy making.

Constitutionally, states control what is taught and who teaches. Curriculum and standards are formally within the purview of the state, as are human capital policies that set teacher and administrator certification requirements, hiring, pay, tenure, and so forth. The traditional federal role has been one of equity with the Elementary and Secondary Education Act as its centerpiece. Federal funds have largely been intended to target special services to disadvantaged students without supplanting state and local funds. Accountability exercised by the federal government historically has been pretty much limited to *distributional* accountability. That is, ensuring that federal funds, which represent a little more than 10 percent of expenditures, are directed to disadvantaged students.

The last few years, however, have been a game-changing time for federal education policy in the United States, with major implications for state and local education efforts and their direction. The federal efforts are heavily driven by a recognition of the importance of education policy for national economic objectives, as well as traditional equity objectives. For education researchers, it has been particularly heady because research has played a big role in shaping the thinking behind many of the changes, and continues to do so. The story of the game-changing is familiar to education policy observers, but a quick review of what has happened, and what is still uncertain, may help set the stage for thoughts on where additional research on education governance might be insightful.

GAME CHANGER 1

Passage of the No Child Left Behind Act (NCLB) in 2001 was the first big game changer for federal education policy since the 1960s and, in many ways, it opened the door for more recent, bolder efforts.

The law *required* states to establish academic performance standards for *all* students within their state, and to hold schools and school districts accountable for student progress in meeting those standards. Schools not making adequate academic progress faced sanctions. Standards and accountability, once the

sole responsibility of state and local education agencies, were now required by Washington, even if many of the details were left to the states. In addition, teachers were expected to meet “high quality” standards, that is, meet state certification requirements. States could opt out of the NCLB requirements but they risked losing federal dollars. Some states balked at the law’s provisions, and the increased reach of the federal government, but all eventually signed on. The legislation likely never would have passed without the strong bipartisan leadership of President George W. Bush and Senator Ted Kennedy.

The expectation, specified in the law (which is still on the books at the time of this writing), is that all students would reach state-established academic proficiency levels by the 2013–14 school year. It turned out to be a humbling pipe dream.

In 2011, about half of the nation’s schools did not make adequate progress. Four states had school failure rates approaching 90 percent (Usher 2012). This was in spite of the fact that an easy way to meet the proficiency level was to lower standards. In fact, an analysis by the National Center for Education Statistics, using the National Assessment of Educational Progress (NAEP) as the standard, found that not only did states vary in the rigor of their standards, but fifteen states had lowered their standards between 2005 and 2007 to avoid sanctions (NCES 2011). A more recent analysis by Gary Phillips (2014), using international benchmarks, found that the standards gap between states with the highest standards and those with the lowest standards represents between three to four grade levels of performance. He concludes: “50 states going in 50 different directions cannot lead to national success that is globally competitive” (p. 4).

But the story doesn’t end there—the game changed again. Another set of major education policy shifts emerged in the latter part of the decade and is currently underway, and then another. All are intended to raise education performance nationally. All increase the federal role, and all are designed in ways to induce state cooperation.

GAME CHANGER 2

Under the Obama Administration, teacher policies—traditionally determined by states—took center stage. Three notable teacher policy shifts mark Game Changer 2. The first shifted the focal unit of accountability from schools, as in NCLB, to teachers. The second shifted the basis of teacher quality from input (i.e., qualifications) to output (student performance). The third shifted accountability based on student academic proficiency *levels* to accountability based on student academic *gains*. These are major policy changes.

The shifts were accomplished through incentive-based reform initiatives developed by the executive branch of the government under the financial

challenges of the Great Recession. State and local coffers were coming up short, and education jobs were at risk. The economic stimulus funds (American Recovery and Reinvestment Act of 2009) provided \$100 billion for education support. The funds were critically needed but they came with strings or, at least, a strong expectation that states focus on four priority areas of reform. One key area was “increasing teacher effectiveness” partly through evaluating teachers on the basis of student achievement.¹

The Obama Administration also used part of the stimulus funds to spur new ways of doing things. A national competition—Race to the Top—was established with \$4.35 billion to support states proposing to make dramatic progress on the reform activities. The winners would be the pacesetters of reform. The criteria used to evaluate state proposals gave heaviest weight to reforms focused on “improving teacher and principal effectiveness based on performance.” Weight was also given to proposals that fully developed and used individual-level longitudinal data systems to track individual student performance gains to inform instructional efforts. At the time the NCLB legislation was passed, only a small handful of states had the data capacity to assess student gains and to link students to their teachers. By 2011, it was different. Since 2005, the U.S. Department of Education has awarded more than half a billion dollars to states to develop individual level longitudinal education data systems. The number of states able to link student data with their teacher increased from four in 2005 to forty-four in 2011.

Most states, hungry for financial support, competed to be bold reformers of human capital policies, an entrenched policy area that was traditionally mired in politics, complex sets of state laws, and practices heavily shaped by local collective bargaining agreements. To ensure that real reform would occur, state proposals had to be endorsed by state officials, local administrators, and unions. Eleven states and the District of Columbia were winners in the first two rounds of the competition and an additional seven states won awards in 2011.² In all, nearly 40 percent of states competed and won, thereby accepting the human capital reform challenge.

New changes emerged in 2011, again with incentives provided by the executive branch to induce state pursuit of favored policies. A divided U.S. Congress was unable to come to agreement on reauthorization of NCLB, and many schools and districts were facing serious sanctions for not achieving the performance levels specified in NCLB. The Obama Administration agreed

-
1. The others were: adopting rigorous college- and career-ready standards and high quality assessment; establishing data systems and using data for improvement; and, turning around the lowest-performing schools.
 2. They include: Delaware, Tennessee, District of Columbia, Florida, Georgia, Hawaii, Maryland, Massachusetts, New York, North Carolina, Ohio, Rhode Island, Arizona, Colorado, Illinois, Kentucky, Louisiana, Pennsylvania, and New Jersey.

to grant states waivers from key provisions in NCLB law but, again, there were strings attached. In exchange for relief of some of the terms of NCLB, states had to propose a plan in line with the Administration's reform agenda. Again, key among the items was evaluating teachers, in part, on the basis of students' test scores. By August 2012, thirty-three states had been granted waivers. Many waivers expired at the end of the 2013–14 academic year, and the U.S. Department of Education granted extensions to states for another year on the basis of reform progress. Indeed, seven states that had been especially successful with developing teacher evaluation systems were eligible to apply for a fast-tracked extended renewal through 2018–19. In effect, many states are continuing to negotiate their education policies with the executive branch of the federal government.

Although the financial incentives and waivers, combined with tough economic times, help explain why states were willing to take on the thorny problem of teacher effectiveness and teacher evaluation, they do not explain why the Obama Administration focused laser-like on teachers.

The policy emphasis shift from schools to teachers was driven largely by research findings that began emerging in the mid-2000s—findings that are difficult to dismiss. Numerous studies by different researchers, utilizing data from different states using different tests and operating in different policy environments, produced similar results. Much of this research has been conducted by AEFPP researchers. Across studies, key findings emerged:

- (1) Teachers are the most important school factor influencing student performance.

Research dating back to the 1966 Coleman Report, and confirmed by numerous more detailed studies since, show that teacher quality accounts for a larger share of the variation in student tested performance than any other school factor. Recent findings also show that high-quality teachers have long-term effects on college-going and earnings of their students (Chetty, Friedman, and Rockoff 2014).

- (2) The productivity variation among teachers is *substantively* important. In a review, Hanushek (2011) notes that teachers near the top of the performance distribution are responsible for about a year and a half of academic gains for their students, whereas teachers near the bottom produce only about a half year gain—a full year's difference!
- (3) The variation in teacher effectiveness *within* schools is at least as large as the variation *between* schools.

Again, since Coleman's 1966 work, studies have found substantial differences in teacher effectiveness within schools that are often larger than the differences between schools. Multiple studies based on detailed large-scale longitudinal administrative data from multiple states confirmed the observation.

- (4) Observed teacher characteristics do not represent teacher quality well. About 80 percent of a school district's budget is for salaries, and academic degrees and experience factor heavily into salary determination. Investing in teacher experience and higher degrees has face validity, but research shows the relationships are not as strong as presumed. For example, although teachers improve over their first years of teaching, the returns to experience tend to flatten out by about year 5.³ In short, the findings suggest that we have traditionally invested a large part of our instructional dollars on inputs, or qualifications that appear to have little effect on student performance (at least qualifications, as traditionally defined and structured).⁴

Together, these highly replicated findings compelled policy attention. If teachers are the source of large variation in student performance, we should pay attention to teachers. They are the ones making the most difference in schools. The large differences in productivity among teachers provide an "existence proof": They show that doing much better is, indeed, possible. Teachers are not interchangeable parts as traditional human capital policies in education seemed to implicitly assume. And, if the within-school variation is as large as the variation between schools, basing policies on school-level performance alone (per NCLB) will miss much of the mark.

Policy moved in multiple directions. Influenced by the policy initiatives described here, a strong emphasis on teacher performance developed. Just between 2010 and 2012, more than twenty states enacted legislation mandating annual evaluations of teachers, based partly on student test score gains, and linked the results to key personnel decisions, such as tenure (Mead 2012). Initial effects were striking. In 2007 in New York City, for example, 97 percent of teachers received tenure in their third year of teaching; in 2012, this dropped to 55 percent (Baker 2012).⁵ In the last few years, dozens of states have changed

3. See Rice (2013) for a review.

4. There is some evidence for the importance of subject matter knowledge, specifically math, at the secondary level. See Goldhaber and Brewer (2000).

5. Forty-two percent were put on probation for another year, and 3 percent were fired. Last year, less than half of teachers on probation received tenure in New York City.

low-bar tenure laws. These changes are tracked in a large database kept by the Education Commission of the States.

Teacher tenure battles are also taking place in the courts. Students in California brought suit, claiming that tenure laws protected poor teachers from dismissal and thereby violated students' state constitutional rights to an equal education. The legal arguments were heavily based on research findings about teacher effects. The judge found the research evidence "compelling" and ruled for the students. A similar case is making its way through the courts in New York.

Concern has also heightened about ways to develop teachers' skills, both through pre-service training programs and professional development. Research in this area is active, though difficult, and often discouraging. For example, a random assignment study of professional development for middle school math teachers, a target that we might think would be highly likely to benefit from professional development, showed no significant effect on either teacher knowledge or student outcomes (Garet et al. 2011). States, like Louisiana and Ohio, began in 2011 to link educator effectiveness back to preparation programs for both accountability and improvement purposes.⁶ By 2014, twenty-two states shared teacher performance data of graduates with their teacher training programs. But reliably improving training is dependent on understanding both what goes into effective teaching as well as how to train for it.

Although considerable research is in progress, reliably identifying the qualities or behaviors of effective teaching and associated training remains a tall order. A recent review cited by National Council for Accreditation of Teacher Education (NCATE 2014) found that, while there is suggestive evidence teacher preparation programs are important for teacher effectiveness in the classroom, more research is needed to guide their improvement. In the meantime, what is clear is that some teachers are considerably more effective than others, and researchers are striving to develop more reliable indicators of teacher effectiveness using multiple measures.

GAME CHANGER 3

The experience of the last decade of education reform in the United States has led to wide agreement among policy analysts on at least two reform fronts—teachers and academic standards. Who teaches and what is taught are both important. The intensified focus on teachers was discussed earlier. Here we are concerned with what gets taught, in particular the standards (i.e.,

6. See www.caldercenter.org/calder-conversation/calder-conversations-evaluating-teacher-training-programs for a discussion of research and technical challenges evaluating training programs.

the content objectives and performance expectations) that guide instruction. NCLB required standards, but as defined by each state. As noted previously, the consequences were probably predictable: wide variation across states. In addition, the accountability provisions in NCLB presented perverse incentives: States were better off lowering their standards and showing the public and the federal government a high proficiency, or pass, rate for their students.

Game Changer 3 confronted this problem by attempting to establish national standards in English language arts and math for each grade—Common Core State Standards (CCSS) that are benchmarked with international comparisons. Standards, indeed, are the linchpin of reform. At a minimum, they form the basis for state assessment policies and state accountability policies. Otherwise, they would have little traction. Mike Kirst, President of the California State Board of Education, sums it up:

As we learned from the 1990–2005 era of systemic state standards reform, when academic standards change, so do policies related to student assessment and school accountability. Moreover, many other specific policies must be aligned and harmonized, including state curriculum frameworks, instructional materials, K–12 and college assessment, K–12 finance, professional development, teacher evaluation/preparation, preschool, and other things (Kirst 2013, p. 1).

Again, the federal government could not establish national standards for the states, but it did encourage their use by giving points to states that adopted common standards in the Race to the Top competition, and by offering favored treatment in waiver requests for states that adopted the CCSS.

The National Governors Association and the Council of Chief State School Officers had led the development of the standards in 2010, and control their use with a license. Governors contributed financially to the development of the standards but private support from the Bill and Melinda Gates Foundation was large and critical. The Gates Foundation provided structural support and over \$200 million in financial support to help states work together on common standards. The foundation also worked to generate political support for the standards by approving grants to key institutional actors across the political spectrum, including teacher unions (both the American Federation of Teachers and the National Education Association), the U.S. Chamber of Commerce, think tanks and political groups on the right and left, and various influential state players. Although the federal government did not provide financial support for the development of national standards, it did support the development of companion assessments for states to use.

By 2011, forty-five states and the District of Columbia had adopted the standards, and did so quickly (and five states did not). The count, however, is a moving target as opposition is growing in at least a handful of states that are voting to repeal or replace the standards. The appeal to teachers of the CCSS has also declined, as well as the appeal to parents.

What appears to be happening is polarization. On the right, conservative politicians oppose federal control in principle—it is seen as an overreach by the federal government that is likely to lead to greater federal control over instructional materials and the possibility of monitoring individual student performance.

On the left, teachers and their unions worry about consequences for teacher evaluations. Without a doubt, the standards embodied in the CCSS exceed those of most states. There is a good chance analyses may show an even wider distribution in teacher effectiveness than we currently see. In addition, to be fair, teacher training and instructional materials are not yet fully in place. The American Federation of Teachers has argued for a moratorium on testing, and its affiliate in New York has withdrawn support for the CCSS. More militant affiliates, such as the Chicago Teachers Union, passed a resolution in May 2014 opposing the CCSS in its entirety, and see it as an effort motivated by a corporate takeover of schools. “Federal takeover” are fighting words for the right; “corporate takeover” are fighting words for the left.

RESEARCH GOING FORWARD

How will all this play out? Where are we heading, and what can we learn? What will be the consequences for education quality and education equity, and eventually for increased national economic competitiveness and decreased national social and economic inequality?

In the last two decades or so, the role of the executive branch of the federal government in education policy making increased dramatically. Both political parties, under the leadership of George H. W. Bush, Bill Clinton, George W. Bush, and Barack Obama, have contributed to this expansion, moving in significant ways toward the development of national education standards and a national system for educational accountability, even while the U.S. Constitution assigns such responsibilities to the states. At a minimum, the roles of the federal and state levels of government are currently in contested territory—in flux and ill-defined. Not surprisingly, pushback, debate, and counter-pressures will surely take form in any attempt to reauthorize the Elementary and Secondary Education Act in the current Republican-controlled Congress where many see recent policies, such as requiring annual student testing, as an overreach by the federal executive branch that should be corrected.

Changes that affect the governance of education in the United States deserve serious debate and dialog. Much is at stake. AEFPP members could usefully examine a number of research questions associated with the political economy of U.S. education reform, and contribute in reasoned ways to the debate and dialog. Research on education governance would differ in focus and approach from much of our current and important work evaluating particular education practices and policies, but it would complement this work. It would help us understand the dynamics of reform in the United States. Political economy questions fit centrally in the mission of a policy research association, and they beg for analysis and debate.

Four classes of questions come to mind. The first three questions focus on what we might call the political economy of education information—how information affects the education policy process and policy outcomes. These questions are especially key as education policies have sharply shifted from input-based education policies to performance-based policies using relatively recently available rich performance data. The fourth question focuses on the role of unions.

First, to what extent, and in what ways, does research-based information about the determinants of education performance affect policy development? Are findings about different contributors to student performance (e.g., teacher training policies, curriculum policies, and graduation standards) more or less influential, or influential in different ways, at the national, state, and local policy levels? In what ways do interpretations of research-based information and responses to that information differ across states with different political orientations or economic conditions?

Second, to what extent do common standards and comparable performance information across state and local jurisdictions spur improvement through competition and innovation? Put another way: Is there an “invisible hand” of democracy that, under strong information conditions, leads to better education performance? To what extent do political leaders attempt to frame performance information in ways that might affect its transparency to the public?

Third, what are the legal and evidentiary factors that generate judicial action for education reforms at different levels of government and across different jurisdictions?

Fourth, what are the roles of different players going forward? The role of unions is probably among the most interesting to watch. Unions are a major political player at the national and state policy levels, and a management partner determining policies at the local level through collective bargaining. They are nongovernmental but have participation rights in important areas of education policy making. Their members (mostly teachers) are the most

important school input affecting student performance. Teachers unions are in the difficult position of representing the interests of *all* their members while it is increasingly evident that some teachers are much more effective than others.

Comments from Dan Goldhaber on an earlier draft were very helpful.

REFERENCES

- Baker, Al. 2012. Many New York City teachers denied tenure in policy shift. *New York Times*, 17 August. Available www.nytimes.com/2012/08/18/nyregion/nearly-half-of-new-york-city-teachers-are-denied-tenure-in-2012.html. Accessed 9 March 2015.
- Bernanke, Ben S. 2007. Education and economic competitiveness. Available www.federalreserve.gov/newsevents/speech/bernanke20070924a.htm. Accessed 10 December 2012.
- Chetty, Raj, John N. Friedman, and Jonah E. Rockoff. 2014. Measuring the impacts of teachers II: Teacher value-added and the student outcomes in adulthood. *American Economic Review* 104(9):2633–2679. doi:10.1257/aer.104.9.2633
- Garet, Michael S., Andrew J. Wayne, Fran Stancavage, James Taylor, Marian Eaton, Kirk Walters, Mengli Song, et al. 2011. *Middle school mathematics professional development impact study: Findings after the second year of implementation (NCEE 2011–4024)*. Washington, DC: Institute of Education Sciences, U.S. Department of Education.
- Goldhaber, Dan, and Dominic J. Brewer. 2000. Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis* 22(2):129–145. doi:10.3102/01623737022002129
- Goldin, Claudia. 2001. The human-capital century and American leadership: Virtues of the past. *Journal of Economic History* 61(2):263–292. doi:10.1017/S0022050701028017
- Goldin, Claudia, and Lawrence F. Katz. 2000. Education and income in the early 20th century: Evidence from the prairies. *Journal of Economic History* 60(3):782–818. doi:10.1017/S0022050700025766
- Hanushek, Eric A. 2011. The economic value of higher teacher quality. *Economics of Education Review* 30(3):466–479. doi:10.1016/j.econedurev.2010.12.006
- Hanushek, Eric A., and Ludger Woessmann. 2007. The role of education quality for economic growth. World Bank Policy Research Working Paper No. 4122.
- Kirst, Michael. 2013. *The Common Core meets state policy: This changes almost everything*. Stanford, CA: Policy Analysis for California Education.
- Mead, Sara. 2012. *Recent state action on teacher effectiveness: What's in state laws and regulations?* Washington, DC: Bellwether Education Partners.
- National Center for Education Statistics (NCES). 2011. *Mapping state proficiency standards onto the NAEP scales: Variation and change in state standards for reading and mathematics, 2005–2009*. Available <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011458>. Accessed 9 March 2015.

National Council for Accreditation of Teacher Education (NCATE). 2014. *Research supporting the effectiveness of teacher preparation*. Available www.ncate.org/Public/ResearchReports/TeacherPreparationResearch/EffectivenessofTeacherPreparation/tabid/362/Default.aspx. Accessed 9 March 2015.

Nelson, Richard R., and Edmund S. Phelps. 1966. Investment in humans, technological diffusion, and economic growth. *American Economic Review* 56(1):69–75.

Obama, Barack. 2010. Education: The economic issue of our time. Available www.whitehouse.gov/photos-and-video/video/2010/08/10/education-economic-issue-our-time#transcript. Accessed 10 December 2014.

Obama, Barack. 2011. Remarks by the President on No Child Left Behind flexibility. Available www.whitehouse.gov/the-press-office/2011/09/23/remarks-president-no-child-left-behind-flexibility. Accessed 10 December 2014.

Organisation for Economic Co-operation and Development (OECD). 2014. *Education at a glance: OECD indicators*. Available www.oecd.org/edu/Education-at-a-Glance-2014.pdf. Accessed 9 March 2015.

Phillips, Gary W. 2014. *International benchmarking: State and national education performance standards*. Washington, DC: American Institutes for Research.

Programme for International Student Assessment (PISA). 2012. *Welcome to PISA 2012 results*. Available <http://nces.ed.gov/surveys/pisa/pisa2012/index.asp>. Accessed 9 March 2015.

Rice, Jennifer King. 2013. Learning from experience? Evidence on the impact and distribution of teacher experience and the implications for teacher policy. *Education Finance and Policy* 8(3):332–348. doi:10.1162/EDFP_a_00099

Usher, Alexandra. 2012. *AYP results for 2010–11–November 2012 update*. Washington, DC: Center on Education Policy.

Yellen, Janet L. 2014. Perspectives on inequality and opportunity from the survey of consumer finances. Available www.federalreserve.gov/newsevents/speech/yellen20141017a.htm. Accessed 10 December 2014.