THE HAMILTON PROJECT

POLICY PROPOSAL 2018-14 | SEPTEMBER 2018

Development Economics Meets the Challenges of Lagging U.S. Areas

Applications to Education, Health and Nutrition, Behavior, and Infrastructure

Stephen C. Smith

MISSION STATEMENT

The Hamilton Project seeks to advance America's promise of opportunity, prosperity, and growth.

We believe that today's increasingly competitive global economy demands public policy ideas commensurate with the challenges of the 21st Century. The Project's economic strategy reflects a judgment that long-term prosperity is best achieved by fostering economic growth and broad participation in that growth, by enhancing individual economic security, and by embracing a role for effective government in making needed public investments.

Our strategy calls for combining public investment, a secure social safety net, and fiscal discipline. In that framework, the Project puts forward innovative proposals from leading economic thinkers — based on credible evidence and experience, not ideology or doctrine — to introduce new and effective policy options into the national debate.

The Project is named after Alexander Hamilton, the nation's first Treasury Secretary, who laid the foundation for the modern American economy. Hamilton stood for sound fiscal policy, believed that broad-based opportunity for advancement would drive American economic growth, and recognized that "prudent aids and encouragements on the part of government" are necessary to enhance and guide market forces. The guiding principles of the Project remain consistent with these views.

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This policy proposal is a proposal from the author(s). As emphasized in The Hamilton Project's original strategy paper, the Project was designed in part to provide a forum for leading thinkers across the nation to put forward innovative and potentially important economic policy ideas that share the Project's broad goals of promoting economic growth, broad-based participation in growth, and economic security. The author(s) are invited to express their own ideas in policy papers, whether or not the Project's staff or advisory council agrees with the specific proposals. This policy paper is offered in that spirit.

THE HAMILTON PROJECT

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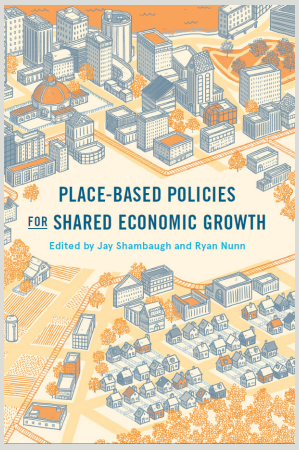
Stephen C. Smith
The George Washington University

SEPTEMBER 2018

A CHAPTER IN THE HAMILTON PROJECT BOOK



Place-Based Policies for Shared Economic Growth

For a century, the progress our nation made toward realizing broadly shared economic growth gave our economy much of its unparalleled strength. However, for the last several decades, that progress has seemed to stall. On critical measures such as household income, poverty, employment rates, and life expectancy, there exist yawning, persistent gaps between the best- and worst-performing communities. These conditions demand a reconsideration of place-based policies. The evidence-based proposals contained in this volume can help restore the conditions of inclusive growth that make it possible for individuals from any part of the country to benefit from economic opportunity.

BROOKINGS

Abstract

This chapter examines the development economics evidence base for insights into policy reforms that would benefit struggling areas in the United States. My focus is on improving education, physical and mental health, infrastructure, and institutions. First, consistent with findings on education policy effectiveness, I propose raising the legal minimum dropout age (prospectively to 19), providing better information about the benefits of completing high school, supporting targeted paraprofessional tutoring, and providing family financial incentives for attending school and graduating from high school. Second, to improve health outcomes in struggling areas, the focus is using and building on existing effective health and nutrition programs and services, identifying ways to include more families who are eligible for but not participating in these programs. Moreover, the recent development and behavioral economics evidence base has extended our understanding of the psychological, cognitive, and economic behavioral lives of the poor; the literature highlights the ways that poverty can impede cognitive functioning, with implications for policies to uplift lagging U.S. areas. Third, a review of evidence on the benefits of improving lagging rural and urban area transportation infrastructure points to the likely benefits of improved connectivity for lagging U.S. areas: reversing the legacy of past discriminatory policies, encouraging sector-based clusters, and extending access to high-speed internet. Finally, the chapter highlights the relevance of some cross-cutting themes in development economics, including the high returns to reliable household microdata and the importance of improving institutions to enable more inclusive, substantial, and lasting progress.

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Introduction

The United States has an urgent need to design and implement effective economic development policies for chronically lagging and struggling areas. Large parts of the country (including many rural areas), a number of recently declining suburban areas, and many inner cities all fall within this category due to their relatively low average incomes and lagging social indicators.

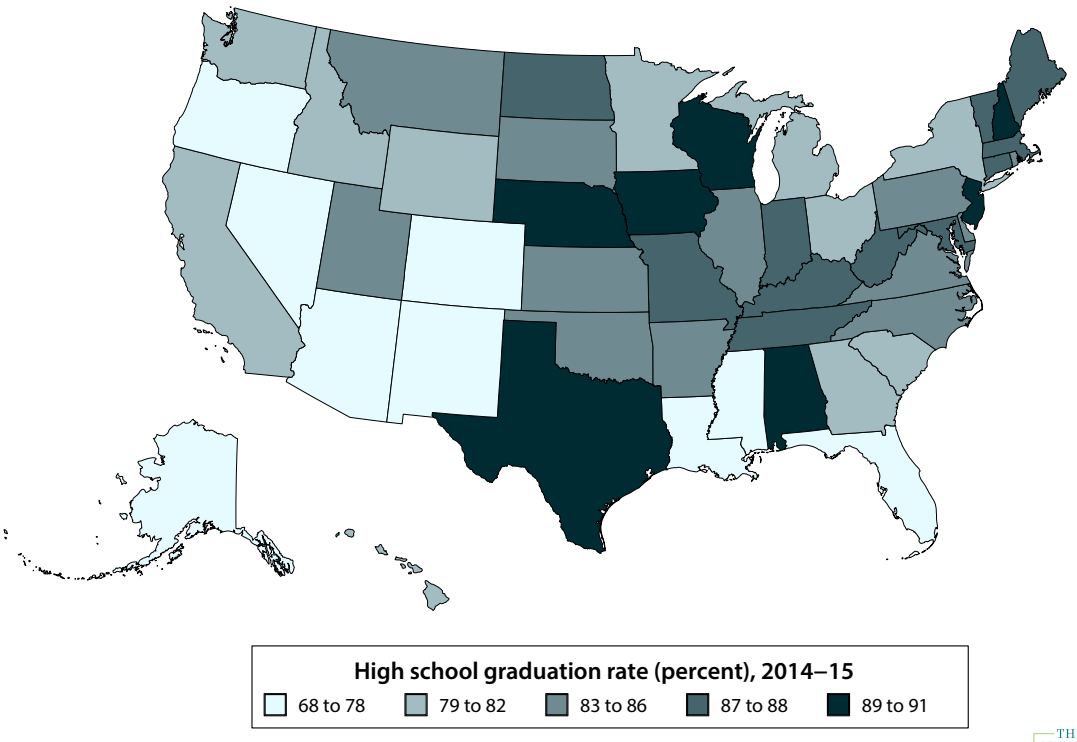
Development economics research has made substantial progress in the past two decades, with innovative analysis and a growing rigorous evidence base. The field has proceeded almost independently from the U.S. economic policy analysis literature, but it is often relevant to the United States in its ways of framing and analyzing evidence and institutions. In this proposal, research findings from the development economics literature are brought to bear on U.S. policy problems.

Sustained catch-up by lagging areas depends on building human capital for the rising generation. This proposal emphasizes that much can be accomplished by first delivering on already-available schooling, and encouraging greater participation in programs of assistance for basic nutrition and health.

I begin by addressing challenges and findings for improving education in lagging areas. A central focus for basic education is to drastically reduce the high school dropout rate, reaching a much higher graduation rate while improving school attendance and learning (figure 1). Consistent with findings on program effectiveness in the development economics literature, this chapter focuses on the high potential benefits of a four-pronged approach: (1) raising the legal minimum dropout age to age 19; (2) carrying out programs to provide

FIGURE 1.

Adjusted Cohort Graduation Rate, by State



Source: National Center for Education Statistics (NCES) 2017a.

Note: The adjusted cohort graduation rate is the share of students within a cohort that graduate in four years with a regular high school diploma. This cohort is adjusted both to include students who transfer in during subsequent years and to exclude students who leave the cohort for acceptable reasons. The 2014–15 graduation rate for the District of Columbia is 68.5 percent. The overall U.S. graduation rate is 83.2 percent.

better information about the benefits of staying in school and completing high school; (3) supporting systematic targeted paraprofessional tutoring; and (4) providing family financial incentives to stay in school and to graduate from high school.

The next section addresses challenges and findings for improving health outcomes, particularly for youths, in lagging areas. It focuses on basic health and nutrition, identifying ways to include many more families in lagging areas who are already eligible but are currently underusing—or not using—effective programs and services available to them, including the Supplemental Nutrition Assistance Program (SNAP; formerly Food Stamps), the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), the Children's Health Insurance Program (CHIP), and Medicaid. The developing country evidence base makes clear that under a wide variety of circumstances and settings, participation in health and nutrition activities for children can be effectively incentivized with conditional cash transfers (CCTs) or cash-plus (transfers plus counseling and connections to services), along with improved information and focused attention to special circumstances of minority populations. Accordingly—while acknowledging the need for expanded eligibility cutoffs as well as additional health and nutrition programs—the paper focuses on encouraging the widest possible use of programs such as SNAP and Medicaid among eligible families who do not participate for various reasons.

This section also examines the recent development economics research on the cognitive burden and mental health problems of the poor, and potential implications and applications for policy. Research shows poverty can impede cognitive functioning, from attention and self-discipline to depression and anxiety. Policy and programs can take account of the cognitive tax of poverty, though—from simplifying forms and establishing advantageous timing for enrollments and other decisions, to providing reminders and offering self-commitment devices.

The next section turns to evidence on the benefits of improving lagging rural and urban area transportation infrastructure, pointing to the need for research on improved connectivity for lagging U.S. areas. The potential role of encouraging sector-based clusters is another proposed research priority. Following the development literature, attention should be paid to coordination problems and the complementarity between public and private investments. It is also important to extend high-speed internet to more homes in lagging areas.

The last section addresses two major, cross-cutting themes in development economics: the high returns to the collection and dissemination of complete, detailed, reliable micro data, and the importance of improving institutions to enable more-inclusive, more-substantial, and longer-lasting progress. Development economics research has emphasized deep-rooted, chronic policy implementation problems; an overarching theme is the quality of institutions, particularly the extent to which they are inclusive or extractive, and the roots of inequality. Findings on institutional quality are reviewed for insights into improving national capacity to substantially and sustainably lift our lagging regions, and perhaps to make more economic and social progress nationally.

The policy recommendations in this chapter have strong individual value, but would be best evaluated and considered together as a mutually reinforcing and integrated package. However, it is important to acknowledge that findings from developing country contexts and locations were obtained in a particular local context, and may not always have direct relevance for U.S. programs. Instead, I argue that the research often indicates important questions for further study in the United States, and provides useful stimulus for new ways of thinking about addressing our own challenges. In each case I propose experiments to determine what program approaches and implementations are likely to work best.

Improving Secondary Education Outcomes

Sustained catch-up by lagging areas depends on the rising generation. Compared with other developed countries, one of the glaring problems for the United States is the fraction of young people who do not complete high school. A high school diploma can be a lifeline for those who would otherwise not complete high school, leading to a significantly higher likelihood of stable employment, a healthier and longer life, a family, and a better chance to stay out of prison. To achieve this better life, strong financial and compulsory education incentives, improved information about the benefits of education, targeted tutoring as needed, and packaged financial incentives proposals are foundational.

This section discusses some key challenges, examines what we can learn from the development economics literature evidence base on schooling and nutrition, and then draws on that literature to develop policy proposals and policy research priorities.

I propose an integrated package for finishing high school based on evidence from development economics research: raising the legal minimum dropout age to 19; providing specific, useful, and easily understandable information about the financial and other benefits of graduating from high school; systematically targeting special tutoring; and packaging financial incentives proposals. Because conditions differ across lagging areas, there is no single solution, but development economics research suggests that solutions can be found even in the most difficult of circumstances.

ACHIEVING LARGE REDUCTIONS IN THE HIGH SCHOOL DROPOUT RATE AND IMPROVING LEARNING

A recent OECD report on high-school graduation rates ranked the United States a dismal 21st among the 26 countries examined. In the United States the dropout rate is higher than average in inner cities and in lagging counties, and higher for black and Hispanic students than for white students (see table 1).

In developing countries school dropout is generally understood to result from one or more demand and supply-side factors. Families face financial constraints that can mean an inability to afford school costs, if not the necessity of child labor. Children, especially girls, have household responsibilities that interfere with schooling, such as caring for younger siblings and collecting water. In addition, households' perceived

TABLE 1.

Dropout Rates, by Gender and Race

Year	Male dropout rate				Female dropout rate			
	All	White	Black	Hispanic	All	White	Black	Hispanic
2015	6.3	5.0	6.4	9.9	5.4	4.1	6.5	8.4
2014	7.1	5.7	7.1	11.8	5.9	4.8	7.7	9.3
2013	7.2	5.5	8.2	12.6	6.3	4.7	6.6	10.8
2012	7.3	4.8	8.1	13.9	5.9	3.8	7.0	11.3
2011	7.7	5.4	8.3	14.6	6.5	4.6	6.4	12.4
2010	8.5	5.9	9.5	17.3	6.3	4.2	6.7	12.8

Source: NCES 2017b.

Note: The dropout rates shown are status dropout rates, which represent the percentage of 16- to 24-year-olds who are not enrolled in school and who have not completed a high school program, regardless of when they left school.

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returns of schooling can be below actual labor market returns. On the supply side, there are often no accessible and nearby schools. Moreover, the quality of education is often poor, either due to limited teaching ability of instructors or to high rates of teacher absenteeism from class.

In the United States schooling is compulsory until at least age 16, although 30 states have higher minimums, with a high of 19 in Texas and 18 in California and several other states (National Center of Education Statistics [NCES] 2018). In many developing countries the minimum school-leaving age is lower, although there are important exceptions—the age is 17 in Brazil and 18 in Mexico.

Before reviewing the evidence, it should be emphasized that it is not necessarily straightforward to infer the causal impact of attendance laws on graduation rates. A key reason is that policy is endogenous: for example, states particularly worried about their dropout rates, such as West Virginia and Mississippi, might raise their minimum dropout age to 17, while states with high graduation rates such as Indiana, Iowa, and Massachusetts, might perceive no pressing need to raise the minimum above their traditional age 16.

Indeed, figure 2 shows a positive but statistically insignificant pattern in the relation between U.S. state minimum school-leaving ages and high school graduation rates. What such statistical associations cannot show is what the graduation rates—or attendance rates pregraduation—would have looked like in the absence of these laws, nor why these laws were passed in the first place. Controlling for other variables in a standard regression framework is helpful, but does not address the basic statistical problem: policy reflects the conditions under which it was formulated.

The recent evidence from developing countries supports the conclusion (as do findings from some developed countries; see table 2 and box 1) that compulsory schooling laws play a significant role not only in increasing attendance, but also in graduation rates. These laws also lead to a wide range of other positive individual and social benefits.

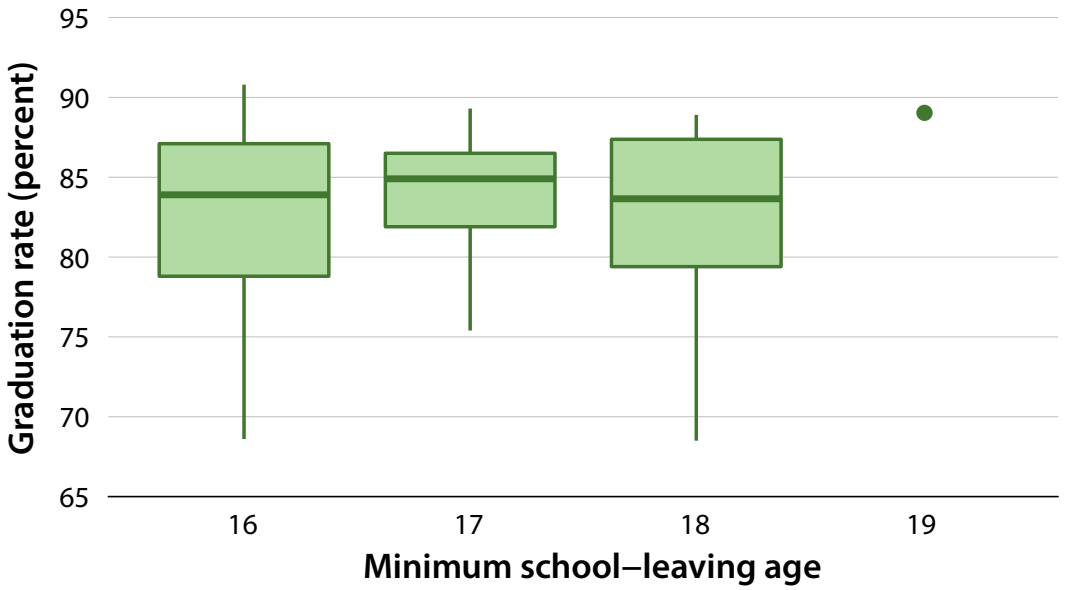
Studies from developing countries on compulsory schooling can be divided into two categories. The first examines the direct impact of minimum dropout policy on schooling outcomes. The second investigates impacts on nonschool outcomes, including crime, fertility, domestic violence, happiness, and well-being.

Impacts on Educational Attainment

Caner et al. (2016) examine the impacts of Turkey's Compulsory Schooling Law (CSL), which raised the compulsory years of schooling of those born after 1986 from five to eight years of schooling. The authors use the variation in exposure to the CSL across cohorts (i.e., students born later were required to attend more years of schooling) and estimated that the dropout rate through eight years of the postreform cohorts were 25–30 percentage points lower than the dropout rates of prereform cohorts. Similarly, Kırdar, Dayioğlu, and Koç

FIGURE 2.

Relation between Minimum School-leaving Age and High School Graduation Rates



Source: NCES 2017a, 2018.

Note: Graduation rates are adjusted cohort graduation rates, which represent the share of students within a cohort that graduate in four years with a regular high school diploma. This cohort is adjusted both to include students who transfer in during subsequent years and to exclude students who leave the cohort for acceptable reasons. The boxes span the 25th and 75th percentile of the graduation rates by minimum school-leaving age, while the thick horizontal lines indicate the median. The vertical lines represent the full range of the data. There is only one state (Texas) whose minimum school-leaving age is 19.

TABLE 2.

OECD Compulsory Schooling Requirements and Graduation Rates

Country	Minimum school-leaving age	Description of compulsory schooling	Graduation rate (percent)
Austria	15	It is mandatory for pupils in Austria to complete nine years of school: four years in elementary school, four years in a school for lower secondary education or grammar school, and one year of upper secondary schooling. Students start primary school at age 6, so the minimum age is 15.	90
Canada	16 (18 in few provinces)	Education is compulsory up to the age of 16 in every province in Canada except for Manitoba, Ontario, and New Brunswick, where the compulsory age is 18, or as soon as a high school diploma has been achieved.	88
Chile	17	Primary (6–13) and secondary schooling (14–17) is compulsory.	90
Denmark	16	Education is compulsory for children below age 15 or 16, but it is not necessary to attend public school.	92
Finland	16	Nine years of basic schooling in a comprehensive school (7–16 years).	99
Germany	16	Children aged three to six may attend kindergarten. After that, school is compulsory for nine or ten years.	87
Hungary	16	All children in Hungary from age 6 to 16 are obliged to attend compulsory education.	86
Israel	18	Compulsory education from kindergarten through 12th grade. Minimum age: 18 years.	92
Korea	15	Primary and middle school is compulsory. Minimum age: 15 years.	93
Italy	15	Education in Italy is compulsory from 6 to 16 years of age.	92
Japan	15	Nine years of basic compulsory education.	98
Latvia	16	General basic education. Minimum age: 16 years.	86
Netherlands	18	Compulsory schooling (5–18 years). Minimum age: 18 years.	93
New Zealand	16	Schooling is compulsory from age 6 to 16. Minimum age: 16 years.	95
Poland	17	Nine years of basic education. Starting age was seven years but was raised to eight years through a recent amendment. Minimum age: 17 years	88
Portugal	18	Education in Portugal is free and compulsory until the age of 18, when students complete the 12th grade.	89
Slovenia	15	Compulsory schooling (6–15 years). Minimum age: 15 years.	92
USA	16 (with limited exceptions)		83
OECD average			**86**

Source: OECD 2017.

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(2015) find Turkey's CSL policy had large spillover effects on postcompulsory schooling; it also equalized educational attainment of urban and rural children. In particular, they estimate that completed years of schooling (by age 17) increased by 1.5 years for rural women. Furthermore, the urban–rural gap in the completed years of schooling at age 17 fell by 0.5 years for men and by 0.7 to 0.8 years for women.[1]

Evidence similar to the results from Turkey has been found for China, where a nine-year compulsory education policy was introduced in 1986. Fang et al. (2012) use the difference in timing of implementation of the policy across provinces to estimate impacts on educational attainment. Their results indicated that the law raised overall educational attainment in China by about 0.8 years of schooling. Xiao and Zhao (2017) conclude that exposure to the law was positively associated not only with individual educational attainment, but also with cognitive achievement in early adulthood. The laws also had a sustained long-run impact, given that the reform had a positive effect on educational attainment even in postcompulsory school years.[2]

In Taiwan the compulsory education requirement was increased in 1968 from six to nine years. Using this reform

as a natural experiment, Sphor (2003) identified an upward shift relative to preexisting trends of more than 0.4 years of education for males and 0.25 years for females in the first six cohorts affected by the newly compulsory junior high schooling.

Impacts on Non-Schooling Outcomes

Research on increasing compulsory schooling requirements in developing countries has found substantial impacts on several outcomes aside from educational attainment. Güneş (2016) used variation in the exposure to Turkey's CSL across cohorts and across provinces, finding that primary school completion (eight years) caused a reduction in teenage fertility by 0.37 births and the incidence of teenage childbearing by approximately 28 percentage points. The results of the paper show that female education had heterogeneous effects, reducing teenage fertility more in provinces with lower population density and a higher share of agricultural activity. Güneş also finds positive impacts on child health. Research on the effect of increased compulsory education in Taiwan find that it led to a substantial reduction in child mortality (Chao et al. 2010).

Özer, Fidrmuc, and Eryurt (2017) estimate the impact of maternal education on childhood immunization, using differences in Turkey's CSL implementation across regions as instruments for schooling of mothers in Turkey. Their results show that additional schooling for mothers increased the probability of completing the full course of DPT and Hepatitis B vaccinations for their children. They also find that education increased women's age at first marriage and birth, while significantly affecting women's tendency to oppose spousal violence against women and gender discrimination. However, Erten and Keskin (2018) find that increased education among rural women led to an increase in self-reported experience of psychological violence and financial control behavior, but no changes in physical violence, partner characteristics, or women's attitudes toward such violence.

In Argentina a 1993 law implemented an increase in the minimum compulsory schooling period from seven to ten years. Exploiting the staggered implementation of the law, Alzúa and Velázquez (2017) find a negative effect of education on teenage fertility rates, operating through two complementary channels: a human capital effect (one additional year of schooling causes a decline of 30 births per

BOX 1.

Evidence from Advanced Economies

In the United States compulsory schooling laws have been found to positively influence a range of outcomes, including progress through high school, wealth, health, probability of voting, criminal behavior, life satisfaction, fertility, and education of offspring (e.g., Hjalmarsson, Holmlund, and Lindquist 2015; Lochner and Moretti 2004; Moussa 2017; Oreopoulos 2007).

In a recent study using student-level administrative data from New York City Public Schools, Moussa (2017) finds that an additional year of compulsory attendance increases the probability of progressing to 11th and 12th grades by 9 to 12 percent, and the probability of graduating from high school by 9 to 14 percent.[3] The study focuses on 9th- and 10th-grade cohorts and exploits the interaction between the school start-age cutoff and compulsory attendance age requirement to identify the effect of compulsory schooling.

Lochner and Moretti (2004) estimate the effect of education on participation in criminal activity using changes in state compulsory schooling laws over time, finding that schooling significantly reduces the probability of arrest and incarceration.[4] Moreover, the authors estimate net social savings from crime reduction among men associated with high school graduation at approximately 14 to 26 percent of the private returns to students. These findings are confirmed by Bell and Machin (2016), who find strong and consistent negative effects on crime from stricter compulsory schooling laws.

Hjalmarsson, Holmlund and Lindquist (2015) examine the causal effect of educational attainment on conviction and incarceration using Sweden's compulsory schooling reform as an instrument for years of schooling, and find a significant negative effect of schooling on male convictions and incarceration; an additional year of schooling was estimated to decrease the likelihood of conviction by 6.7 percent and incarceration by 15.5 percent.

Oreopoulos (2007) uses changes in minimum school-leaving age laws in Britain, Canada, Ireland, and the United States as natural experiments to estimate lifetime gains to remaining in school for students who would otherwise drop out. He concludes, "Lifetime wealth increases by about 15 percent with an extra year of compulsory schooling" (2213). He also finds that an extra year of compulsory schooling improves health outcomes, self-reported life satisfaction, and happiness. His results suggest that, at the time they drop out, adolescents are ignoring or heavily discounting the future consequences. Although gains are large for those affected, and laws are worthwhile for this outcome alone, Oreopoulos finds that a majority of dropouts are not affected due to a lack of enforcement.

1,000 women), and a weaker effect of current enrollment (a 1 percentage point–rise in the enrollment rate leads to 3 fewer births per 1,000 women).

The Policy Approach

- **Raise the minimum age** for those not yet having completed schooling for compulsory school attendance. Because compliance is likely to be a continued problem (Oreopoulos 2007; Whitehurst and Whitfield 2012), raising the mandatory schooling age would be complementary with the other initiatives for enhanced incentives and information recommended in the following sections.[5] These include a combination of financial initiatives (such as conditional cash transfers), informational interventions (improved information on the returns to schooling), and perhaps appropriate nudges, in addition to expanded efforts to improve the equality of schooling.[6] Increased attention in U.S. education policy to combatting chronic absenteeism over the last decade may be an effective complement to raising school age laws, reducing some of the noncompliance concerns.

Care must be taken when monitoring the implementation of truancy enforcement to ensure that it is not done in a discriminatory manner. There have been allegations that the Dallas Independent School District has enforced Texas's currently unique dropout age of 19 years more stringently for African American youths, and that this created a differential pipeline into the criminal justice system.[7] However, if implemented appropriately, the increased policy focus on lowering chronic absenteeism—as discussed in Bauer et al. (2018)—is likely to enhance the effectiveness of raising the minimum age for compulsory school attendance.

ACTIVELY SHARING SPECIFIC INFORMATION ON BENEFITS OF SCHOOLING WITH STUDENTS AND FAMILIES

With imperfect information, research suggests that students and/or parents could systematically underestimate the returns to education, or discount these returns in response to uncertainty they have about these returns and what they mean for them.[8] This might matter for students' decisions about dropping out and the hours they spend studying.

In the United States today there is much more segregation by income and education than in the past, such that students from a poorly educated family are now less likely to come into contact with highly educated families (Putnam 2015). Accordingly, some students and families might have a greater need for information about postsecondary options.

In addition to encouraging more time in school and preventing students from dropping out, programs to improve information for students and parents about the returns to schooling may incentivize students to learn more in school, and parents to support and push students to do so. Providing detailed and accurate information would entail expanding the collection and analysis of data about specific benefits of schooling, for the purpose of publicizing and sharing the most relevant information directly with students and families.

The recent development economics literature includes informative studies that find that providing information about the benefits of education to students has positive impacts on the amount of time that students spend in school, as well as the amount that they learn.

Providing information to parents and students might lead to lower dropout rates. In Serbia a primary-level remedial education program was aimed at improving the attendance of students of Roma descent (a minority ethnic group). Battaglia and Lebedinski (2017) use the phased-in implementation of the program to estimate that parents from treated schools were 12.3 percentage points more likely to expect their sons to complete secondary school. These parents also increased their estimate of the return to their sons' education by almost 9.4 percent for boys and 10 percent for girls.[9] In Madagascar evidence from a randomized controlled trial (RCT) evaluation showed that providing additional information on the returns to schooling resulted in a 0.2 standard deviation improvement in test scores (Nguyen 2008).

In the Dominican Republic, 8th-grade boys from randomly selected schools were provided information on returns to schooling that had been estimated from earnings data (Jensen 2010). The boys were followed for the next four years; those receiving this information completed about 0.20–0.35 more years of schooling on average. However, there was no effect for the poorest students. Jensen interprets these results as suggesting that financial limitations (or other features of poverty) are binding constraints on the school-leaving decision for the poorest students, even if there is a demand for schooling on the part of students and families.[10] Consistent with this view, Kaufmann (2014) surveys Mexican students and finds that "poor individuals require higher expected returns to be induced to attend college than individuals from rich families," even though their estimated returns are high, and that "a sizeable fraction of poor individuals would change their decision in response to a reduction in direct costs" (585–86). An implication is that credit constraints also play a significant role, though it does not address whether estimates are below actual returns.

Evidence from China tells a different story. Loyalka et al. (2013) studied an intervention for 7th graders in the Hebei and Shannxi Provinces of rural China that included 45-minute counseling sessions on earnings associated with different levels of schooling. However, the authors did not find significant effects on the dropout rate or test scores for China. They argue

that students from low-quality schools, on receiving this information, concluded that spending more time on schooling would not yield higher returns. Strikingly, in a more-intensive intervention, four 45-minute career-counseling sessions were given to students. In this case, the authors find a significant negative effect on time spent in school. Their interpretation is that upon receiving additional information on entry requirements for postsecondary education, students from low-quality schools reduced their expectations or aspirations for success. It is possible that part of the difference is explained by the fact that China is not a market economy, and that there may be a wider belief that decisions are not made on the basis of merit. In any case, we should not expect uniform results in every context; this is a reason for emphasizing active experimentation.

Paying or otherwise rewarding students for performance may also lead to improvement in the accuracy of students' estimates of returns to schooling. Sequeira, Spinnewijn, and Xu (2016) study the impact of receiving high school fellowships in India—essentially, financial recognition for schooling effort—and estimate that receipt of an award is associated with a 0.74 standard deviation increase in the student's perceived mean earnings of an additional year of schooling, as well as a significant decrease in the perceived variance of those earnings. Parents of fellowship students also reported higher perceived returns to education.

The Policy Approach

- **Provide information on effects of schooling** for junior and senior high school students, partially targeted to lagging areas. This information would cover not only expected impacts on earnings, but also other outcomes ranging from types of jobs, to life expectancy, to the estimated likelihoods of incarceration.[11] For example, if students (and their parents) know that a high school diploma leads to a much lower risk of incarceration, this might raise their expectation of the returns to schooling. The research findings described suggest that students and parents may have erroneously low estimates of lifetime income and other benefits of schooling, and that programs providing information and encouragement for students not to drop out using concrete, specific information could be cost-effective. Some of the information may provide more motivation to parents than to some students; it is therefore desirable to make the information as salient as possible to both, and perhaps also to peers.

- **Implement a systematic, funded program to provide information** to lagging rural areas and inner-city parents of young children about the lifetime benefits of positive parenting, including reading to and engaging with their child.[12]

This provision of information is related to the ongoing roles of counselors and social workers in the schools. Clearly, such initiatives would work with those most knowledgeable about the students and local context. The information interventions may be especially important to the degree that an increase in the minimum dropout age cannot be legislated, or would be incompletely enforced. They are proposed as a complement to the other recommended education programs in this chapter, including the tutoring and other incentives proposed in the following sections.

ENHANCING LEARNING THROUGH PARAPROFESSIONAL TUTORS

Students face many problems that go beyond the immediate school experience. For example, some might face poverty traps in which low aspirations lead them to make low investments in their schooling, which in turn reinforces poverty for the next generation.[13] However, there is evidence that informal tutoring systems, with ongoing monitoring and mentoring, can make a positive difference. Volunteer mentoring programs are found in many schools throughout the country. For example, the Obama administration launched its My Brother's Keeper initiative for young women and men of color in 2014 to coordinate activities as well as increase and disseminate knowledge about what works in the mentoring field. In Chicago, guidance programs for youths had strong effects in reducing school dropout and increasing graduation rates. They also led to decreased criminal behavior, total and violent crime arrests, and readmission to youth detention (Heller et al. 2017).

Banerjee et al. (2007) report on an RCT evaluation of a program in India in which 3rd- and 4th-grade students who were lagging in literacy and numeracy were tutored for about two hours a day by *balsakhis* (children's friends). These young people, usually women, were paraprofessionals who had finished secondary school but typically not beyond, and who lived in the same (often relatively deprived) areas as the children. In the program, an NGO (Pratham) assigned instructors to regular government schools to tutor 3rd- and 4th-grade students who had fallen behind. These *balsakhis* typically met with about 15 to 20 children in a special class during school hours for a couple of hours, teaching basic numeracy and literacy skills that students are normally expected to have learned in 1st and 2nd grades; instructors closely followed a curriculum developed for this purpose by the NGO. For preparation, the *balsakhis* attended a two-week training program at the beginning of the school year followed by regular refresher training. The program increased average test scores by a substantial amount (0.28 standard deviations after two years). The total program cost was very low, and mostly consisted of tutor pay, which was less than that of regular teachers. Results suggest the program was 12 to 16 times more cost-effective than hiring

new teachers. Hundreds of thousands of students participated in this program, which was relatively easy to scale up.

Children in India also benefited from reading camps, in which trained village volunteers gave students intensive tutoring. Banerjee et al. (2010) find that children lagging in school who participated in the reading camps showed very strong improvement in reading skills.[14] (In principle, this could be accomplished by a paid paraprofessional when there are insufficient available trained volunteers.)

In Bangladesh the use of large numbers of continuously trained, closely supervised paraprofessionals is a hallmark of BRAC (originally known as the Bangladesh Rural Advancement Committee), one of the most celebrated NGOs in the world. BRAC has employed paraprofessionals in its nonformal teaching and other activities for decades (Smillie 2009; Smith 2009). In this regard, it offers another developing country model.

The Policy Approach

- **Establish a paraprofessional tutor program**—analogous to India's Balsakhi Program though at a higher school level—to address a range of impediments to learning, including poverty traps caused by low aspirations.[15] The paraprofessionals would have regular training refreshers and be closely monitored by professionals; to allay concerns over risks of abuse, interactions would all be in public spaces. Programs of this type already exist in the United States in a variety of forms; research is needed to determine what is effective and feasible, and what can be scaled up to a nationwide initiative.

- **Experiment with alternative schooling arrangements**, analogous to nonformal schools, such as those run by nonprofits in developing countries (e.g., BRAC, Save the Children). One possibility is to adapt India's reading camps for conditions specific to lagging areas in the United States, altering the program to cover more-advanced subjects for high school students.

Note that the paraprofessional tutors would be a supplement—and not a substitute—for regular teachers, and could be integrated into existing programs such as Teach for America.

FINANCIAL INCENTIVES FOR AT-RISK STUDENTS AND THEIR FAMILIES

Absenteeism is a strong predictor of dropout. Chronic absenteeism (often corresponding to what is popularly known as truancy) has been described as a hidden educational crisis in the United States. The U.S. Department of Education reports that nearly 20 percent of students still enrolled in high school are chronically absent, with lagging areas such as Detroit having far higher absenteeism rates (U.S. Department of Education 2015–16).[16] Raising minimum dropout ages, mentoring, and providing targeted information will help improve attendance and graduation rates, but for many at-risk students in lagging areas these encouragements may still be insufficient to ultimately lead to high school graduation.

Combatting chronic absenteeism has recently become a more prominent policy goal in many states; it has been included in the metrics of success under the Every Student Succeeds Act of 2015 in most states (Bauer et al. 2018). Evidence from developing countries shows that modest conditional cash transfer (CCT) incentives can be highly effective.

The recent development economics literature includes informative studies of financial incentives for students to remain in school, and to learn more while in school. In recent years many developing countries have implemented cash transfer programs for families at the bottom of the income distribution. Some are unconditional transfers that are sometimes accompanied with social services and referrals; other transfers are conditional on meeting prespecified requirements, including school attendance, as well as health and nutrition checkups.

RCT studies have reported positive impacts on educational outcomes of cash transfer programs from a growing number of countries, including for Colombia (Attanasio, Fitzsimmons, and Gómez 2005), Ecuador (Schady et al. 2008), Jamaica (Stampini et al. 2018), Mexico (e.g., Behrman, Parker, and Todd 2011; Schultz 2004), Nicaragua (Maluccio and Flores 2004), and Pakistan (Chaudhury and Parajuli 2010).

Studying the impacts of PROGRESA—the first modern CCT program—Schultz (2004) estimates that the largest impacts were on the transition from primary to secondary school for boys (about 5–8 percentage points more likely) and for girls (about 8–10 percentage points more likely). Notably, the PROGRESA program used an escalating schedule of reinforcement, in which the size of the grant the family received increased as children progressed through successive grades (Rosenberg 2008). The purpose of this payment schedule was to compensate for the opportunity cost of sending children to school (Levy 2006), which included wages received from child labor that increased with the child's age.[17] Similarly, Attanasio et al. (2010) estimates that a Colombian CCT program increased school participation of youths that were 14–17 years old by 5–7 percentage points and of younger children by 1–3 percentage points. The largest estimated effects were in relatively urban parts of rural regions as compared to very rural areas. The authors conclude that the effects were primarily driven by reductions in child domestic work. Barrera-Osorio et al. (2011) find that postponing the cash transfer payments until the point when children reenroll in school leads to a greater impact on enrollment rate while retaining the same increase in attendance rate prior to

reenrollment. The biggest gains were found for the poorest and most at-risk children. The students were not required to reenroll as a condition of receiving the funds, but the program disbursed cash at the time when education expenses were incurred. In a parallel experiment, lowering monthly cash transfers to families but paying the balance when and if a student graduated and enrolled in tertiary education had the desired effects: graduation and tertiary enrollment rose significantly. Notably, making payments contingent on graduation rather than attendance actually led to higher daily attendance than when the payments were made for attendance alone.

Results of cash transfer programs from a number of other countries are consistent with the previous findings, though effect magnitudes differ. Schady et al. (2008) estimate significant increases in Ecuadorean school enrollment of about 3–4 percentage points. Further effects on enrollment were significant only for households receiving conditional transfers (i.e., not for unconditional transfers). In Nicaragua, Maluccio and Flores (2004) estimate an average net increase in school enrollment of 13 percentage points, along with improvements in grade progression. Catubig and Villano (2017) also identify a quite small (about 1 percent) but positive and significant effect on Filipino school enrollment for participants of a cash transfer program. Unusually, evidence from Bangladesh suggests no effects of cash transfers on school attendance, though it identifies positive health impacts including reduced malnutrition and improved nutrition knowledge (Ferre and Sharif 2014).

Evidence of effects on other outcomes has been more mixed. Stampini et al. (2018) identify the impact of CCTs on learning outcomes and placement after school for Jamaican students. They report positive effects on test scores for boys, who scored 5.1 percent higher on the 6th grade achievement test than nonbeneficiaries and placed in higher-ranked secondary schools. However, no significant impacts for girls were identified. In the Philippines, a partial schooling subsidy for child education increased child labor, apparently because the cash transfer was insufficient to pay for all costs, requiring children to earn the remainder (de Hoop et al., forthcoming).

This example clearly demonstrates the importance of careful program design.

Turning from students and families to teachers, the evidence on the impact of financial incentives is quite mixed. In one of the most methodologically careful studies, Glewwe, Ilias, and Kremer (2010) conducted an RCT in Kenya on a program that rewarded primary school teachers on the basis of student test scores, scores that importantly included penalties for students who did not take the exams. Results show improvement of test scores on exams linked to the incentive scheme, but not on other unrelated exams.[18] Moreover, students did not retain the gains once the incentive program ended; this casts doubt on studies that examined only short-term improvements.[19] Evidence from the United States is similarly mixed (see box 2).

The Policy Approach

- **Implement and extend CCT and cash-plus programs** in lagging areas in the United States. Although there are of course small, local programs providing grants and funding guarantees for high school graduates from lagging areas to go to college, there are fewer incentives to encourage high school completion for those who are not (or do not think they are or could be) college-bound. Attaching incentives to intermediate milestones on the path to high school graduation would also be helpful, particularly to the extent that there are benefits to staying longer in school even without graduating. Incentives may be increased as successive milestones are passed.

- **Engage the private sector in CCT programs**, encouraging firms to offer entry-level jobs (or high consideration for jobs) to individuals who graduate but are not going on to college. The private sector is already quite active in a substantial number of charter schools (such as at Thurgood Marshall Academy in Washington, DC), but this engagement is often limited to or focused on potential future college opportunities, rather than on immediate employment. A graduate making use of such employment opportunities would not be making a decision to forgo college; the hope is that students who decide not to go to college may now decide to do so later, for which their high school diploma is of course a prerequisite.

BOX 2.

Evidence from U.S. Student Financial Incentives

Thus far, the evidence of effects of student financial incentives on student performance in the U.S. has been weak at best, though one reason may be the small size of the trials (Fryer 2011). Research in this area is ongoing, but to more closely parallel the developing country evidence, evidence on the impact of incentives for the family (parents or guardians) is needed. One RCT examining the impact of financial incentives for teachers in New York City found no effect on student outcomes including attendance, scores, or graduation. If anything, results suggest a negative effect on student achievement (Fryer 2013).

- **Build on current early childhood interventions**, developing effective targeted programs in lagging areas. Doing so is likely to facilitate the adolescent-age interventions examined in more detail in this chapter because it will improve student preparation when they arrive in middle and high school.

A note of caution: the choice of conditions and the consequences of not meeting the conditions need to be considered carefully in any type of conditional transfer. As examined in the section below on psychological and cognitive dimensions, living in poverty creates a high cognitive burden.

Taken together, the evidence base accumulated in development economics suggests a number of policy approaches that could be pursued in the United States, most notably: raising the minimum dropout age, providing specific information about the benefits of graduating high school, targeted special tutoring to improve outcomes, CCTs, and other incentives to encourage high school attendance and graduation. Not every approach would transfer directly to the U.S. context, but the evidence suggests that carefully monitored experiments and trials in these areas could be fruitful.

Raising Nutrition and Health for Lagging Areas: Addressing Physical Health, Mental Health, and Cognitive Challenges

It is critical to recognize and address the fact that, for many children and youths, improved nutrition and health care are also foundational for school success. There is much discussion about the insufficient coverage of programs for delivering basic nutrition and health to families in lagging areas. Many families in need remain ineligible for assistance, particularly in states that have not expanded their Medicaid coverage under the Patient Protection and Affordable Care Act (ACA) of 2010.

ENCOURAGING UTILIZATION OF EXISTING HEALTH AND NUTRITION PROGRAMS BY ELIGIBLE FAMILIES

Although eligibility requirements are stringent, existing programs of nutrition and health insurance for the poor are often unused or underused even by those who are eligible. Indeed, a significant number of parents of low-income U.S. children do not take full (if any) advantage of even the publicly funded health and nutrition assistance opportunities they do have (Kenney et al. 2011). This problem is likely to be particularly concentrated in lagging areas.[20]

Important examples of U.S. programs for improving health and nutrition are SNAP, WIC, CHIP, and (expanded) Medicaid. Extensive empirical evidence from the United States demonstrates that these programs make valuable investments, and that they pay for themselves over a lifetime.[21]

Another more general federal program, Temporary Assistance for Needy Families (TANF—sometimes known simply as welfare), provides general cash assistance that may of course be directed to health and nutrition, or vital expenditures including school clothes, supplies, and transportation.

Despite the success of public health programs such as Medicaid and CHIP at improving insurance among children from low-income families, Rudowitz et al. (2016) find that of the "32.3 million nonelderly people who remained uninsured as of 2015, an estimated 27 percent (8.8 million) are eligible for Medicaid or the Children's Health Insurance Program (CHIP)." About 77 percent of these people live in states that have expanded Medicaid. The study estimates that some 3.2 million uninsured children are Medicaid- or CHIP-eligible. Similar gaps exist for SNAP and WIC.[22]

A key policy concern is also retention among those enrolled at some point in these programs. Although available national estimates appear to predate the ACA, Sommers (2010) estimates that, in 2008, 26.8 percent of uninsured children had been enrolled in public insurance the previous year, with 21.7 percent formerly enrolled in Medicaid and 5.1 percent enrolled in CHIP.

Many low-income families seem to be unaware of these programs or how to enroll in them (Kenney et al. 2011). Additional identified reasons for program dropout and low retention include documentation and related concerns among immigrant parents of children born in the United States. In addition, states have faced widely varying budgetary constraints as they emerged from the Great Recession, with some states apparently making significantly less effort at enrollment outreach than others. This partially explains the state-to-state variation in program enrollment and retention rates.

Finally, it is worth mentioning that an estimated 2.2 million currently uninsured people are too poor to qualify for health insurance tax credits but remain ineligible for Medicaid because they live in a state that did not expand Medicaid as part of the ACA (Garfield, Damico, and Orgera 2018).

Cognizant of such enrollment and participation shortcomings, the American Academy of Pediatrics (AAP) issued a policy statement in 2014 including statistics on limited participation among those eligible, and making recommendations to increase their enrollment and retention in CHIP and other existing health programs (AAP 2014). It also called for program coverage expansion and improved funding. On the supply side, AAP recommendations included expanding the funding base of the CHIP program and maintaining contingency funds for states and regions that have faced periodic budgetary constraints, particularly after the Great

Recession. The AAP also recommended that all states be mandated to adopt automatic coverage for newborns and to design incentives to encourage continuous enrollment. They further recommended that CHIP enrollment and renewal procedures be streamlined to allow self-declared income, use passive renewal procedures, eliminate face-to-face renewal requirements, and improve communication with families regarding renewal procedures.[23] On the demand side, the AAP stressed that concerted efforts are necessary to raise awareness about these programs and their benefits among already-eligible families by developing outreach activities that are specific to local context. They recommended collaboration with community-based programs having strong relationships with local communities to help enroll uninsured patients.

Research has demonstrated very substantial economic benefits from successfully addressing undernutrition and health-care coverage deficiencies in developing countries (e.g., Alderman, Behrman, and Puett 2017). An important channel through which these economic benefits are generated is the effect of children's improved health on learning in school. For example, de-worming in Kenya decreased absenteeism by about one quarter (Miguel and Kremer 2004); students were still benefiting even a decade later, with more years of schooling completed, better jobs, and other outcomes (Baird et al. 2016).

Incentives can be quite effective at increasing nutrition and health service utilization rates—and thereby improving health—among eligible families. Developing country research indicates that families' knowledge of programs service and availability is limited and that outreach can be useful for raising utilization rates. In addition, CCT and cash-plus programs can increase the use of available health services and improve health outcomes (Ranganathan and Lagarde 2012). In different CCT programs, receiving cash has been made conditional on terms requiring that children get regular health checkups, that children's immunizations are up to date, that pregnant and breastfeeding women have regular health visits, and that mothers attend health education workshops or receive other health information. (Note that CCT interventions typically comprise multiple conditions and transfers, and it is difficult to attribute outcomes to a specific programmatic component.) Eligibility for other development programs are also sometimes conditional on health activities.[24]

The research on the impact of CCTs on health outcomes focuses on the role of the programs in overcoming financial, nonfinancial, and behavioral obstacles. In accessing health services, obstacles faced by families may include direct costs (e.g., health goods and services that require payment), indirect costs (e.g., transportation costs), and other opportunity costs (e.g., loss of income-generating activities when spending time accessing health services). Most CCTs aim at overcoming one or more of these barriers to improve health outcomes of the target populations.

There is a substantial body of research showing that CCTs can help overcome these obstacles and improve the use of available preventive and curative health services, as illustrated by the following sample of research findings. In Mexico, under the pioneering and rigorously evaluated PROGRESA CCT program, participant families visited health facilities twice as frequently as nonbeneficiary control group families (Gertler 2000). A different CCT program in Nicaragua similarly increased the percentage of infants taken to public health facilities over the previous six months by 17.5 percent for all children, and 23.6 percent for children with special needs (Maluccio and Flores 2004). In Honduras and India CCT programs significantly increased the rate of antenatal care visits (Lim et al. 2010; Morris, Flores, et al. 2004). Finally, a CCT program in Chile led to a significant 4 to 6 percentage point–increase in the number of preventive health-care visits for children less than six years of age, albeit only in rural areas (Galasso 2011).

Impacts on health outcomes have generally been positive.[25] In Mexico children who are 0 to 35 months old in families receiving CCTs experienced a reduction in their illness rate of about 40 percent after two years of the program. Moreover, there were marked increases in mean hemoglobin, reductions in anemia prevalence, and lower incidence of stunting and obesity (Barham 2005; Berhman and Hoddinott 2005; Fernald, Gertler, and Neufeld 2008; Gertler 2004). Similar results were obtained in Nicaragua and Bangladesh (Ferre and Sharif 2014; Maluccio and Flores 2004).

CCTs have been found to help overcome nonfinancial as well as financial obstacles, including imperfect information and lack of understanding among potential participants of health and nutrition benefits (e.g., Fiszbein and Schady 2009; Gaarder, Glassman, and Todd 2010; Medlin and de Walque 2008).

Some interventions have used direct communication of relevant information to address problems such as the underestimation of returns to health services, without using CCTs.[26] However, simple information provision interventions are likely to break down under two common circumstances: when incorrect beliefs are self-reinforcing, and when individuals believe they have no need for information (especially when incorrect information has deep cultural roots). In such cases, a cash transfer conditional on receiving correct health information may be more effective. A key condition in the successful CCT programs implemented in Brazil and Mexico included attendance at educational workshops for pregnant and lactating women. Health and education participation conditions have also been used for subsidized microfinance, which may yield benefits.[27] Finally, CCTs have been used to

provide nudges toward healthy habits (Higgins 2010; Medlin and de Walque 2008; Thaler and Sunstein 2008). In a classic example of a simple nudge, there is some suggestive evidence that unconditional cash transfers (UCTs) can improve health outcomes simply by including words such as "health" or "nutrition" in the program titles.[28] The impact of user fees is another widely studied topic. In most cases, studies find that user fees have a large negative impact on the use of health services.[29]

While there is less evidence on UCTs than on CCTs, there are some promising initial findings. Research on the staggered implementation of a UCT in South Africa found that unconditional transfers given to women had a positive effect on child nutrition, with significant gains in height-for-age for treated children (Agüero, Carter, and Woolard 2007). Similarly, for a UCT in rural Ecuador, Paxson and Schady (2010) report evidence that treated children belonging to the poorest of households had an 18 percent improvement in combined cognitive and behavioral scores (receptive vocabulary, short-term and long-term memory, visual integration) and a 16 percent improvement in combined physical outcomes (hemoglobin, height, fine motor control), compared to control group children.[30]

The Policy Approach

- **Facilitate family participation** in existing health-care and nutrition-assistance programs like CHIP, Medicaid, and SNAP by
    - instituting automatic coverage for newborns;
    - designing CCT incentives to encourage continuous enrollment;[31]
    - streamlining CHIP enrollment and renewal procedures;
    - using passive renewal procedures and eliminating face-to-face renewal requirements;
    - rebranding some local programs to emphasize specific goals, even when there are no specific conditions for continued participation;
    - improving communication with families regarding renewal procedures, and by otherwise raising awareness about these programs and their benefits among eligible families; and
    - developing local context–specific outreach activities, including collaboration with community-based programs to enroll all eligible families.
- **Use RCTs to assess these initiatives**, including CCTs, to determine which is most effective in different U.S. contexts.

These proposals are not intended to suggest that the supply of education as well as health care is not also limited in lagging areas, nor that this is unimportant. There may be poor school quality, as well as limited numbers of doctors willing to accept Medicaid patients. The point is rather that while the supply of services matters, raising take-up of existing programs is also important; there is evidence that initiatives to achieve this goal have had favorable impacts in developing countries.

Still more can be done to improve the likelihood that eligible people in need will enroll—and have more effective outcomes for those already enrolled—by systematically incorporating lessons from recent research in behavioral economics, including insightful experiments in developing countries.

ADDRESSING THE PSYCHOLOGICAL AND COGNITIVE DIMENSIONS OF POVERTY

The recent development and behavioral economics evidence base has extended our understanding of the psychological, cognitive, and economic behavioral lives of the poor, with implications for lagging U.S. areas ranging from education to mental health policies.

In addition to physical health deprivations, lagging areas in the United States also struggle with negative cognitive and psychological implications of poverty, ranging from stress- and environmentally-linked deficits in cognitive skills, to lower noncognitive skills, to a greater incidence of mental illness (including substance abuse). Moreover, cognitive functions that can be directly impaired by specific stressors of poverty include focused internal and external attention, inhibitory control, cognitive flexibility, and planning.

Effects on noncognitive skill are just as important: A growing understanding of the role of these skills for life success has emerged from recent progress in economic research and policy analysis (Heckman and Kautz 2012; Heckman, Pinto, and Savelyev 2013; Heckman, Stixrud, and Urzua 2006). Noncognitive skills may be taught (or learned implicitly) in school, and they are likely formed at least as much in interactions with parents, peers, and the broader world. Poorer children gain fewer noncognitive skills, making it more difficult for them to function well in the job market and other social settings.

More broadly, poverty-related causes of stress can range from financial worries to persistent noise, air pollution, and short and disrupted sleep (Patel et al. 2010). In turn, poor thinking and judgment can create or worsen poverty, thereby creating the potential for a vicious circle. These factors make it more difficult for people living in lagging areas to take actions to improve their conditions.

Substance abuse is a serious mental health disorder. By 2016 overdose deaths were five times higher than in 1999; an estimated 630,000 people died from drug overdoses between these two years. In 2016 about two thirds of the approximately

64,000 drug overdose deaths in America involved an opioid (Centers for Disease Control and Prevention [CDC] 2017). An increasing number of opioid deaths are attributed to fentanyl and other dangerous synthetics (see figure 3). A disproportionate fraction of these deaths occur in lagging rural counties and lower-income urban areas.

In the United States, as throughout the world, there is a strong relationship between poverty, depression, and anxiety (Patel 2000); this is a pronounced problem in lagging areas such as some Native American reservations (Costello et al. 2003).

The suicide rate in the United States has also risen significantly: in 2016 suicide was the second-highest cause of death through adolescence and young adulthood, and the fourth-highest cause of death among Americans age 35–54 (CDC 2016).[32] Rates of mental illness among youths are rising as well, although some of the reported increase could be due to better diagnosis.[33]

Fortunately, much is being learned about these problems and issues, and some of the less well-known but insightful research has been conducted recently in the developing world.

Addressing the "Cognitive Tax" of Poverty

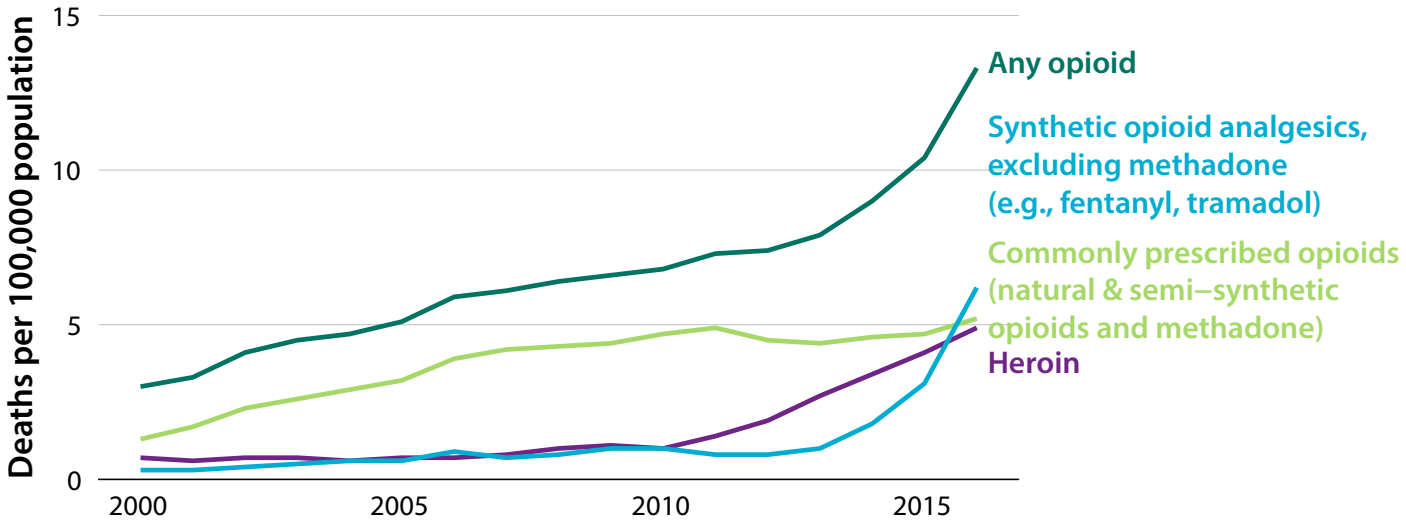
In recent years the development economics literature has focused much more research on the ways that poverty can impede cognitive functioning, from attention and self-discipline to mental depression and anxiety (see Mani et al. 2013; Mullainathan and Shafir 2013; Schilbach, Schofield, and Mullainathan 2016; and World Bank 2015). Impacts of low income and undernutrition are fairly well-established. Although more research is needed, there is also suggestive evidence that poverty can lead to cognition-impairing stressors including chronic pain (Case and Deaton 2015), exposure to chronic noise (Stansfeld et al. 2005), and potentially sleep deprivation and disruption (Dean, Schilbach, and Schofield 2018). In sum, living in poverty means paying cognitive costs that the nonpoor may be completely unaware of.

Being poor means having to focus more attention on urgent financial problems that require little or no attention by the affluent; these problems leave less cognitive capability (e.g., in memory or attentiveness) for other activities that would aid in breaking out of poverty (Mani et al. 2013). Examples of such activities include preventive health care, adherence to drug regimens, promptness for appointments, attentiveness to their children, management of family finances, and general worker productivity. Cognitive challenges tend to increase with stress. Field evidence from India shows that farmers perform at lower levels during periods of financial stress before harvests relative to after the harvest—approximately equivalent to an effect of 10 IQ points (Mani et al. 2013).

In an earlier section I examined the potentially beneficial effects of providing information to help children and parents make better schooling decisions (Battaglia and Lebedinski 2017). The new behavioral economics research on the cognitive

FIGURE 2.

Opioid Overdose Deaths, 2000–16



Source: CDC 2000–16.

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burden of poverty is suggestive of ways that assistance (including by counselors) might improve the capacity of people to make good decisions in other ways. It underlines the importance of seeking to simplify forms and to help people fill them out, and of timing programs and activities intended to benefit the poor to when cognitive load is likely to be lower (Mani et al. 2013).

But other factors such as undernutrition also play significant roles in the cognitive problems of the poor. Though perhaps less severe in the United States, undernutrition and food insecurity still affect many U.S. children and families: in 2017 17.0 percent of children lacked consistent access to sufficient nutrition (Coleman-Jensen et al. 2018).

Potential Impacts of Undernutrition

It is readily apparent that undernutrition decreases physical strength. Recently, evidence has grown that it also leads to decreased cognitive functioning including difficulties concentrating and thinking clearly, inattentiveness, less self-discipline in resisting temptation, and other limitations.[34]

In India an RCT examined the effects of providing additional calories for undernourished bicycle-rickshaw drivers (Schofield 2014). Work hours and earnings were recorded throughout the five-week study, and performance on physical and laboratory-based cognitive task tests were measured. Results showed that the rickshaw pullers given extra calories had more income and also significantly improved their performance on the cognitive tests by 12 percent. In addition, the authors found that study participants significantly reduced their discount rates for work effort. The bicycle-rickshaw drivers were given the opportunity to choose between taking a journey with a lighter load today or a heavier load tomorrow; both journeys earned the same payment received tomorrow. The nutrition-treated participants were a striking 25 percent more likely to choose the lighter journey today instead of delaying at the cost of a having a more difficult task tomorrow (Schilbach, Schofield, and Mullainathan 2016).

Impact of Cash Transfers on Psychological and Cognitive Dimensions of Poverty

Several RCT studies have demonstrated that reductions in poverty caused by cash transfers lead in turn to reduced stress and depression, and improved psychological well-being, in countries including Kenya (Haushofer and Shapiro 2016); Malawi (Baird, de Hoop, and Özler 2013); and Mexico (Fernald and Gunnar 2009; Ozer et al. 2011).

There is also a growing cash-plus literature showing that family cash transfer programs, coupled with complementary family services including psychosocial support home visits, can have wider beneficial effects on children and youths (Roelen et al. 2017). In poor South African households receiving cash transfers, adolescents who also received household visits by a home-based counselor reported fewer HIV risk-taking behaviors than those in cash-only households (Cluver 2014).

Another example of the importance of combining financial and psychological support comes from a Liberian study that examined the impact of cash and therapy on violence and other criminal activities. The research found that transferring a small amount of funds to criminally engaged men had a short-run positive effect in deterring violence and other criminal activities. Cognitive behavioral therapy also had a positive but time-limited effect, and a combination of the two interventions had a long-term effect (Blattman, Jamison, and Sheridan 2017).[35]

The Importance of Being Reminded

All people have cognitive limits; memory is imperfect, and everyone can benefit from being reminded of important things that may otherwise be forgotten and not attended to in a timely way (see, e.g., Thaler and Sunstein 2008). When individuals are subject to poverty and other stressors that can be found in lagging areas, their cognitive resources are more challenged. Recent developing country research has shown the benefits of sending reminders to the poor.

Adherence to medicine regimens is lower for the poor than for the nonpoor in every country, including the United States; this has been attributed to the cognitive burden of living in poverty. An example is the lower adherence to HIV/AIDS drug regimens: In Kenya patients were randomly selected to receive either daily or weekly cell phone reminders to take their HIV medications (Pop-Eleches et al. 2011). Patients who received weekly text (SMS) reminders had a 13 percentage point–increase in their adherence rates, defined as taking their medicines 90 percent of days, though daily reminders produced no effect.

Evidence from Bolivia, Peru, and the Philippines shows that reminders sent by text message can lead to increased savings (Karlan, Morten, and Zinman 2016). In particular, the reminders were effective when they included reference to specific future goals. The implication is that limitations in memory and recall (or focus) are part of the cause of low savings, and that reminding people of their future goals can change their current behavior. Similarly, significant effects have been identified for loan repayment reminders (Karlan et al. 2016).

Reminders can be implicit, rather than rely on personal contact or phone or text messages. In Kenya providing the poor with chlorine at the place where they collect water was more effective at increasing usage than providing it at their homes (Kremer et al. 2009).

Offering Self-Commitment Devices

People are often quite aware of their cognitive limitations, including how they get more challenged under stressful conditions. In these cases, many people choose to take part in self-commitment devices when they are available. Peoples' interest in taking part in these is itself evidence of the types of cognitive limits emphasized by behavioral economists.

In the Philippines there was a high take-up rate of a product enabling a commitment to increase savings by voluntarily giving up access to the funds until their savings goal was reached. The product was effective in increasing participants' savings rates (Ashraf, Karlan, and Yin 2006); this is both evidence of self-control problems and evidence of how people can be offered choices to help them to manage this limitation.

Study participants in Kenya did not increase savings when given access to savings accounts, but did when given access to rotating savings and credit associations (ROSCAs) (Dupas and Robinson 2013).[36] This suggests the importance of external self-commitment devices or related social pressure for achieving savings goals.

Analogously, nearly half of low-income workers in a study in India were willing to pay for a product providing incentives to remain sober; about a third of participants were willing to give up 10 percent or more of daily income to make a sobriety commitment (Schilbach, forthcoming). Again, this constitutes evidence that cognitive limitations are quite real, and also provides a hint at how they can be managed.

Family Mentoring and Child Development and Sponsorship

Important evidence comes from weekly home visits by community health workers in Jamaica that demonstrated to mothers how to play and interact with their children to promote cognitive and emotional development. Two decades later, children from families selected for the program earned 25 percent more income as adults compared with children in the control group (Gertler et al. 2014).

There is also evidence that international child sponsorship can have an impact on long-term outcomes (Wydick, Glewwe, and Rutledge 2017). In particular, Wydick, Glewwe, and Rutledge (2013) estimate that a child sponsorship program led to a 12 to 18 percentage point–increase in the rate of secondary school completion.[37] Moreover, adults in six countries who had been sponsored as children saw positive impacts not only on years of schooling, but also on adult employment and income.[38] Glewwe, Ross, and Wydick (2018) find that sponsorship improved psychological well-being. Ross et al. (2018) find that child sponsorship led to substantial and statistically significant increases in self-esteem, optimism, and expected education in Indonesia, Kenya, and Mexico.

The Policy Approach

Clearly, one way to reduce the mental strain of poverty is to attack the existence of deprivation itself. That said, the evidence from development economics suggests policy approaches to dealing directly with the strain.

- **Encourage families to take full advantage of benefits**—including mental health benefits—to which they are already entitled in their current health-care programs. This can be prioritized in the same outreach efforts to bring new users into programs such as Medicaid. Medical professionals can receive further information and training on new findings in cognitive research as well as adolescent mental health.

- **Increase the accessibility of these programs.** Poor mental health conditions and lack of agency, as well as other impacts on cognitive bandwidth, likely explain why many of people do not sign up for these programs in the first place.[39] It will be important to take this into account when conducting outreach to sign up more participants, and then encourage them to make full and adequate use of these programs. This will probably require special training. For example, such an initiative could require building cognitive considerations into the design of and outreach for any policies and programs intended to benefit those living in poverty, applying a general approach that Thaler and Sunstein (2008) labeled choice architecture. In particular, it is important to make it easy for qualified families to learn about programs that could help them, select beneficial options, sign up, and then follow up and participate.

- **Support local mentorship programs,** including those that are informal and semiformal, for both youths and adults.

- **Pair cash transfers with other services.** The developing country evidence suggests that cash transfers—whether or not they are conditional on behaviors such as taking children for a health checkup—will often have a greater effect if they are combined with other services at the point of contact (Roelen et al. 2017). These cash-plus program services can help compensate for the so-called cognitive tax that results simply from being poor.

Improving Infrastructure in Lagging Areas

BETTER NETWORKS FOR PEOPLE, GOODS, AND INFORMATION

Good connections can help a region to thrive; a lack of connections reduces opportunities to catch up. For a problem as widely discussed in the United States as the crisis of transportation infrastructure, its severity and scope seem to have not fully registered. The infrastructure maintenance problem is widespread and increasingly dangerous. At the national level the American Society of Civil Engineers (ASCE) gave a nationwide infrastructure grade of a D+ in its 2017 Infrastructure Report Card. But lagging areas sometimes have particularly severe basic deficiencies.[40] In some cases, U.S. infrastructure deficiencies are significantly worse than developed country norms (ASCE 2017). Faster and safer travel time improves connections of lagging areas to jobs and to markets for current and potential products made in those areas. In lagging urban areas, better transportation may provide residents access to jobs that are physically out of reach. Though not ideal for some, no doubt many others would accept distant jobs if they were made accessible through improved public transportation and roads. In rural areas, better connections may make it possible to move into new economic activities, such as cultivating high-demand specialty agricultural products.

Some chronically lagging inner-city areas in the United States still suffer from past federal policies, of which the best-known example is redlining. Highways were placed with the conscious intent of segregating neighborhoods and weakening, if not completely removing, African American neighborhoods (Rothstein 2017). Planning was developed at the state and local levels, but was carried out with federal acquiescence; these were ways to get around desegregation rulings and were discussed as such (Rothstein). In cities including Los Angeles and Miami, highways were deliberately placed to eliminate African American areas (Rothstein).

Information infrastructure has been taking on ever-increasing importance. Many citizens in both urban and rural lagging areas still lack internet access, often because it is either unavailable or unaffordable. This impacts education, job search, and access to health and other vital information, as well as business development.

Development Economics Findings

The development economics literature suggests two main arguments for why physical infrastructure raises economic activity and incomes. First, better infrastructure lowers the transport costs of trading goods and services with a wider market.[41] Second, roads or rails enable movement of factors of production (primarily meaning people). Better infrastructure may facilitate labor exiting an area to one in which income and other opportunities are greater. Part of the benefit of infrastructure may be the easier flow of information about outside opportunities. In addition, improved infrastructure may be needed to move larger capital goods. However, some of these production benefits may be limited in that roads also make it profitable to transport competing goods from outside regions, putting some existing firms out of business; of course, this might ultimately benefit consumers.

In developing countries the lagging areas generally have less connectivity than in developed countries. In part, this is simply the result of there being less economic activity to connect to or less demand for travel for recreational purposes. But there is evidence that building better transportation access can cause increased economic activity; on the other hand, there is also evidence of negative impacts on areas that are *not* connected to new transportation infrastructure (Redding and Turner 2015).

Having adequate infrastructure in the right places is an essential component of economic development. Many systematic analyses of a developing country's economic problems (such as growth diagnostics exercises) include findings of infrastructure deficiencies (Hausmann, Klinger, and Wagner 2008; Hausmann, Rodrik, and Velasco 2007; Rodrik 2003, 2007).[42] Governments in developing countries often fail to build infrastructure despite the need and opportunity, or they build the wrong infrastructure in the wrong places. But the most frequent problem is neglect of maintenance after construction is completed, whether built and funded by domestic government or with foreign participation or assistance.

Fiscal constraints are an often-stated reason for not building or maintaining infrastructure. This is a common refrain during debt crises, including the lost decade in Latin America

of the 1980s and the (nearly) two lost decades in Africa of the 1980s and 1990s. Austerity remains the most common response to financial crises, particularly those associated with balance-of-payments problems, but it has not often led to the desired economic growth. One explanation comes from research in development economics that highlights the strong complementarities between public and private investment, implying that private investment is often not forthcoming without public investment.[43] However, in austerity programs public investment is generally one of the most quickly cut expenditures.

Proximity to new transportation infrastructure can confer large benefits. In the Industrial Revolution, railroad expansion took place at the same time as historically rapid economic growth in Japan, the United States, and Western Europe, though the causality is ambiguous. Using historical evidence, Donaldson and Hornbeck (2016) estimate that the total value of U.S. agricultural land would have been 60 percent lower without railroads.

In the context of developing countries, Ghani, Goswami, and Kerr (2013) estimate that districts in India located 5–10 kilometers away from the new Golden Quadrilateral highway system gained more productivity than districts 10–50 kilometers from the highway. Datta (2012) uses the same quadrilateral program as a natural experiment and concluded that the highway system led firms to enhance their efficiency by improving their supplier source and reducing necessary inventories.[44]

Donaldson (2018) presents strong evidence on the positive impacts of transportation on trade and economic development in India. Using archival district-level panel data, he estimates that colonial railroads reduced the cost of trading, narrowed regional price variations, increased trade volumes, and led to a 16 percent increase in real agricultural income (a proxy for economic development in a historically agrarian economy such as India).

Gunasekara, Anderson, and Lakshmanan (2008) estimate net benefits of improved infrastructure in Sri Lanka, investigating the magnitude of structural transformation at the firm and household levels resulting from a major highway project. The authors find that individual firm output increased by 70 percent, and that highway improvement induced firms near the highway to become more capital intensive, and firms farther away to become more labor intensive. At the household level, the highway project increased income and induced a shift away from land- and labor-intensive occupations, and toward skilled employment.[45]

Developing economies provide useful experiences of connecting previously isolated, hinterland areas to the core economy. One such example was studied by Blankespoor et al. (2018) with the building of the major Jamuna Bridge in Bangladesh. Manufacturing activity shifted from the isolated to the core region of the economy; these de-industrialization effects were most pronounced at an "intermediate distance from the bridge" (35). However, there was considerable other evidence of positive effects on economic activity, suggesting net economic benefits.[46]

Bosker and Garretsen (2012) also report evidence of benefits of improved connectivity in sub-Saharan Africa, with most of the impacts apparently driven by access to other markets in the region.[47] Jedwab and Storeygard (2018) present evidence that the impact of transportation investments varies by context; specifically, effects of market access appear to be stronger for cities that are smaller, more remote, surrounded by poorer agricultural land, and less politically favored.[48]

Evidence from China suggests somewhat different conclusions. Banerjee, Duflo, and Qian (2012) examine the effect of historical access to transportation infrastructure on regional economic outcomes in China, concluding that proximity had positive—but quite small—impacts on per capita GDP, and no impact on per capita GDP growth. Faber (2014) examines the impact of China's National Trunk Highway System, taking advantage of incidental connections with peripheral counties that were otherwise similar to counties that were not connected. Faber finds negative impacts on connected peripheral counties, apparently due to reduced industrial output growth as investment shifted to larger connected cities.[49] However, a more positive lesson of research on China for lagging areas is the importance of industrial districts, or clusters.[50]

Past decisions about infrastructure that helped some regions (and possibly hurt others) may have effects lasting several decades or more. Jedwab and Moradi (2016) find persistence in the effects of colonial railroads in sub-Saharan Africa on economic development.

Lessons and Limitations of the Research

In recent years the development economics literature on infrastructure has made considerable progress.[51] Better data have been collected, and they have been analyzed using better identification strategies. Most studies of transportation projects have found strongly positive direct, local effects; however, their general equilibrium effects (i.e., taking account of spillover effects for areas and markets not directly affected by the infrastructure project) are still not well understood or measured. And transportation infrastructure can have different effects in different contexts; the reasons for this heterogeneity are not yet well understood. Moreover, transportation infrastructure is very costly, but there has been very little assessment of the net benefits of transportation projects in comparison with alternative investments, such as in

education or health. Finally, the placement of infrastructure is very important—it can have substantial effects on the pattern of economic activity that can last for a century or more.

The Policy Approach

Considering the challenges and the developing country evidence base, researchers and policymakers should start with the following questions before proceeding to policy solutions:

- Are there lagging areas (rural or urban) that have been systematically bypassed?
- Are areas that were cut off in the past (but more recently connected) still experiencing lasting impacts?
    - To what extent were lagging areas intentionally discriminated against in the past, and what is the legacy of that discrimination? As one observer put it, not all lagging areas were created equal; some areas were intentionally created to lag, while others are unintentional victims of changing economic circumstances.[52]
    - Has infrastructure development artificially isolated parts of cities, as was the case with highways dividing or cutting off neighborhoods decades ago?
- Have some lagging areas lost benefits of connectivity when interstate highways or other key infrastructure bypassed them?
- Can more be done to reconnect these disconnected areas? What can we predict about impact?
- To what extent do the findings in the literature, which largely focuses on the impacts of creating new infrastructure, extend to investments in infrastructure maintenance?

A national, comparative study of cutoff urban areas is a prerequisite for a systematic policy approach. Some key topics for future research include complementarities among private investments, and complementarities between public and private investments.[53] For an example of how related coordination problems have likely constrained the prospects for a fuller recovery in Detroit, see the innovative analysis of Owens, Rossi-Hansberg, and Sarte (2018).

Relating the Development Economics Evidence to the U.S. Context

As has been discussed, there is much good news from the developing world: in recent years much has been learned about what works best in education and health, and the lessons have been put to effective practice. A broader lesson is not to overlook what we can learn from countries that are "off the beaten track." The wealth of carefully collected data from developing countries can provide valuable ideas for designing and testing programs, making for more-effective, evidence-based policies in the United States. Moreover, we can recognize some systemic similarities between problems that U.S. lagging areas face and the deeper difficulties of the developing countries.

In addition, one specific lesson from research on developing countries is not to overlook the significance of the psychological dimensions of poverty; rather than add to pessimism, this can aid in finding new and effective ways to help remedy the conditions of the poor. There are also broader insights one can draw from development economics, notably the importance of data, institutions, and the distribution and impacts of poverty.

LIMITED DATA AVAILABILITY IN THE UNITED STATES

This chapter shows that rigorous research on programs and policies is quite often carried out in the developing world; given this fact, surely we can benefit from testing programs in the rollout phase, across different contexts and lagging area settings, and to seek continuous improvements throughout a program's life. The survey data collection experience in developing countries shows that much can be learned for crafting as well as testing new approaches that solve local chronic problems. Program research in developing countries can point out ideas that might be successfully adapted here, depending on rigorous research on what designs work best in what contexts.

The previous sections have reported the results of dozens of studies from 32 developing countries on programs to assist poor or otherwise deprived people that use large-scale household surveys.[54] These studies found a large number of causally meaningful as well as statistically significant results that informed this chapter. None of this could have been possible without funding to collect relevant household data. This includes large-scale multicountry household survey programs, such as the World Bank Living Standards Measurement Surveys and the USAID-funded Demographic and Health Surveys, each of which includes at least one survey round in more than 100 countries. Moreover, a large number of special purpose household datasets are carried out for targeted research and evaluation purposes. World Bank firm-level surveys have also been highly useful.

Some progress is being made using data that have already been collected; recently available administrative data, particularly from IRS and unemployment insurance records, has been used to study local areas (e.g., Chetty and Finkelstein 2013; Chetty et al. 2016). However, these data are not widely available to researchers and have thus far been used only in limited ways.

In addition to making better use of existing data, it is necessary to collect improved household survey–level data and other microdata in the United States to improve our ability to address problems of lagging areas. The point in some cases is not national- or even state-level statistically representative data, but data collection targeted directly at the population in question in lagging regions; this would enable causal research for those populations, as has been done for developing country studies.

An example drawing from the earlier section on improving secondary education outcomes is to survey junior high and senior high school students as well as their parents and guardians to determine precisely what they think about employment, income, and other benefits of schooling to help inform outreach planning. These would be complemented with special surveys of teachers and social workers. There is much to be learned informally about the U.S. lagging area context by some in-depth discussions—as I did in developing this chapter—but there is no substitute for statistically reliable sampling. Nor is there a substitute for rigorously evaluating programs intended to address social problems.

INCLUSIVE VERSUS EXTRACTIVE INSTITUTIONS

The preceding sections have underlined that while the United States faces serious economic and social problems in lagging areas, there are also solutions that have helped in other parts of the world—including in some countries with far lower per capita incomes. These include solutions for essential

development prerequisites for development such as education, health care, and nutrition.

In addition to its widespread use of experimental methods, another hallmark of the development economics research community is its application of institutional analysis in assessing the deeper roots of successful and unsuccessful development. A better understanding of institutional constraints may also assist in the United States when designing—and successfully implementing—policies that will be more effective among those that are feasible in practice.

Institutions are humanly devised constraints that shape interactions (or the rules of the game) in an economy, including formal rules embodied in constitutions, laws, contracts, and market regulations, in addition to informal rules reflected in norms of behavior and conduct, values, customs, and generally accepted ways of doing things.[57] The critical importance for successful growth and economic development of good institutions in this sense has been well established by a large body of development economics research.

Institutions particularly conducive to growth provide broad-based incentives for making productive investments in contrast to incentives for investing in extraction (Acemoglu and Robinson 2005, 2012; Acemoglu, Johnson, and Robinson 2001). Extraction in this general sense refers primarily to extraction from people and from public resources.[58] Other key institutions provide for access to opportunities for the broad population (see box 3), constraints on the power of elites and of chief executives, protection from expropriation, and restriction of coercive, fraudulent, and anticompetitive behavior.[59]

High income is associated with good institutions; some part of this association may be due to the ability of rich countries to afford these institutions. However, the empirical evidence is clear that good institutions are also a cause of higher growth and incomes (Acemoglu and Robinson 2005, 2012).

Finally, it is important to note that poor institutions make it difficult to address important complementarities, the resulting potential for multiple equilibria, and resolving coordination problems that make it very difficult to otherwise move to a better and preferred equilibrium. Owens, Rossi-Hansberg, and Sarte (2018) apply this approach insightfully to problems of renewal in Detroit.

Poor institutions at the national and local levels can constrain opportunities for improvement in lagging regions. We should

BOX 3.

Education: Political Economy of the School Financing System

In most other rich, developed countries, national governments play the primary role in funding the public education system. In contrast, the federal government plays a much smaller role in the United States, with state and particularly local government largely financing their public school systems (Temin 2017). One consequence of this is high educational inequality: local communities in a better position to fund their school systems provide education that is as good as that in any other rich country. On the other hand, poorer communities spend less per student, and are likely to have poorer outcomes on average. The degree of educational inequality in the United States is unusual for rich countries, but it is much more common among developing countries.

Over time, educational inequality in the United States has become more deeply structural and actively transmitted across generations by an educated elite who often, but not always, coincide with those with the highest income and wealth (Currid-Halkett 2017; Putnam 2015). To help lagging areas, an essential step is to provide more educational funding. This will likely be difficult as voters in richer areas may oppose taxation that help schools in distant communities.[55] Enhanced targeted federal support for public education should play an important role in assisting lagging areas. While this may not fully address educational inequality, and may be difficult to sustain politically, the structural funding problem would benefit greatly from more-active public discussion and policy experimentation.

High inequality (in wealth and educational attainment) and non-inclusive institutions are mutually reinforcing, as is made clear by a substantial body of evidence from development economics research. In particular, there is evidence that high inequality leads to low public educational investments and that this in turn perpetuates poor institutional quality as well as low incomes (e.g., Engerman and Sokolof 2002; see also Easterly 2007; Sokolof and Engerman 2000; Todaro and Smith 2014, 89–90). Similarly, Easterly (2003), Husain (1999), and other analysts have concluded that Pakistan's poor education and literacy performance may result from incentives of the elite to keep the poor from gaining too much education.

There is historical evidence of obstacles to public education with similar patterns in the United States, of which the Jim Crow South is the best-known example.[56] Whether anything analogous may be present in the United States today is a different question; the historical and international record suggests that it is important to examine this closely. In any case, addressing patterns of unequal educational opportunity is a clear priority for improving the prospects of lagging areas.

not underestimate the importance of improving institutions to enable more inclusive, substantial, and lasting progress in the United States. Insufficiently inclusive institutions may be a factor explaining why some areas lag, and why some areas do so chronically.

THE DISTRIBUTION AND IMPACTS OF POVERTY

The U.S. Census Bureau (Census) reports that 40.6 million people were below the poverty line in 2016. The Census defines *severe* poverty as the fraction among those who are poor whose income is less than half their official poverty threshold (depending on their family size). In 2016, the most recent year with available data, this fraction reached 45.6 percent of the poor, the highest it has been for at least two decades (having been 39.5 percent in the baseline year of 1996). Thus while overall poverty has decreased in the past couple of years, falling almost to its pre–Great Recession levels (which was 12.5 percent in 2007), more of the poor find they have farther to go to climb out of poverty (Bialik 2017). The best poverty measures show that overall poverty in a country can worsen even when the fraction who are poor falls, if incomes fall enough for those who remain poor.[60]

A characteristic of developing countries is the high burden of poverty on children. The data show that this is also the case in the United States.[61] Moreover, the chance of upward economic and social mobility for the poor and near-poor children—not only climbing out of poverty but also reaching a toehold into the middle class—have fallen to levels lower than most other rich countries (Chetty et al. 2016; Davis and Mazumder 2017). This low rate of mobility in itself may have discouraging effects on aspirations.

Moreover, in the United States, as in developing countries, poverty is not spread out evenly among the population, but is found concentrated in regions. In less-developed countries this poverty is primarily in rural areas, but to some extent also in peri-urban areas such as extensive slums within or adjacent to cities. Poverty in developing countries usually affects some identifiable subgroups of the population more than others, including racial, ethnic, indigenous, caste, and religious groups—above and beyond regional differences. For example, in Brazil poverty is concentrated among blacks, who are generally descendants of former slaves.

Aside from inner cities and individual rural counties in many states, there are broader regions of high poverty in the United States. Native American and Alaskan Native reservations are a clear example. As noted earlier, many developing countries have severe regional inequalities. When governments focus on them, they consider how disparities across regions can slow growth, sow political instability, and even give rise to violent conflict.[62]

Lessons from development economics suggest that addressing concentrated poverty is an important consideration when examining regional gaps. Other chapters in this volume consider the issue in more detail: Nunn, Parsons, and Shambaugh (2018) discusses the distribution of poverty across counties, Hardy, Logan, and Parman (2018) considers the interaction of poverty and the spatial concentration of the African American population, and Neumark (2018) considers the high concentration of poverty in areas within counties.

Questions and Concerns

1. The United States is very different from many of the countries discussed in this report. How relevant is that evidence to U.S. initiatives?

The goal of this chapter is to find inspiration for new ways to think about addressing challenges at home, as well as reasons to try specific types of program experiments. Many studies argue that findings from one context and location have external validity to other settings; that is not the argument here. But development economics research can point out ideas for effective programs that could be successfully adapted here, as a result of rigorous research on what designs work best in what contexts. In fact, a major finding of the chapter is that rigorous research on programs and policies is often done even in the developing world, and that we will benefit from testing programs in the rollout phase and across different contexts, seeking continuous improvements throughout a program's life.

2. Can these kinds of programs be conducted in a fiscally responsible manner?

The cost of these proposals need not be high, as some of the developing country evidence demonstrates. In fact, the evidence shows that many targeted programs of the type examined in this chapter can pay for themselves, if we take a long time horizon and consider benefits including the lifetime savings in health costs and productivity gains. Rigorous evaluation can go a long way toward ensuring that funds are used effectively. The programs can be implemented in the context of other cost-saving measures that rigorous evidence can reveal. And with evidence in place, the nonprofit sector might also help to implement the most effective programs.

Conclusion

This chapter has drawn from research on education, health, nutrition, behavior, and infrastructure in many developing countries to highlight programs and policies that appear to also have high potential for lagging areas in the United States.

Each approach points to an important area for which increased U.S. research and evidence would be particularly useful. I underline again that findings from developing country contexts and locations may have no direct, immediate, or specific application to the United States or any specific U.S. programs. But the relevance of the research and the indicative value of its findings should be clear for the goal of the chapter: to help identify good candidates for specific program and policy experiments here at home. It is hoped that these programs will provide useful stimuli for new ways of thinking about addressing local challenges. In each case, funding is proposed for experiments to determine what program approaches and implementations are likely to work best.

The present is an advantageous time for action. This is a period of unusually low and fast-declining unemployment rates. As of August 2018, at least a small dent is being made in the lower labor participation rate.[63] Similarly, at least in some areas wages for unskilled workers are at last showing signs of rising, albeit quite slowly. But over a much longer time horizon—the necessary perspective of development economics—recent developments have not altered long-term trends for lagging places. As in developing countries, an upswing of this kind is an opportunity to take steps to sustain inclusive growth over extended periods (Rodrik 2007).

This chapter was developed and written from the perspective of the development economics literature. Even for policy proposals discussed in this chapter that are not new to the U.S. policy discussion, this chapter aims to present new evidence, new ways of looking at problems and solutions, and new forms in which to carry out specific programs.

Author

Stephen C. Smith

Professor of Economics and International Affairs, The George Washington University

Stephen C. Smith is professor of economics and international affairs at The George Washington University, and a research fellow of the Institute of Labor Economics (IZA). He recently completed a term as a UNICEF senior research fellow; and he has been a Fulbright Research Scholar, Jean Monnet Research Fellow, and Fulbright Senior Specialist, as well as visiting fellow and then nonresident Senior Fellow at the Brookings Institution. Smith is coauthor with Michael Todaro of *Economic Development*, author of *Ending Global Poverty*, coeditor with Jennifer Brinkerhoff and Hildy Teegen of *NGOs and the Millennium Development Goals*, and author or coauthor of more than 100 other publications. Smith has done onsite research in developing countries including Bangladesh, China, Ecuador, India, Peru, Senegal, and Uganda. Smith is a member of the BRAC-USA Advisory Council, and has consulted for the World Bank, United Nations Development Program, International Labor Organization, and World Institute for Development Economics Research. He received his Ph.D. in economics from Cornell University.

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Endnotes

1. The paper's authors found no evidence of a narrowing gender gap; for urban areas the estimated gender gap in postcompulsory schooling actually increased.
2. Their point estimates suggest that one additional semester of reform exposure during ages 6–15 increases the probability of being enrolled in school by 8.5 percentage points and increases the years of schooling by 0.17 years at ages 17 to 22. Moreover, reform effects become greater in the longer term: one additional semester of exposure leads to a 0.46-year increase in completed schooling at ages 21–26. The positive effect results from an increase in the probability of finishing high school.
3. The magnitude of results varied, depending on the specification.
4. They argue convincingly that their findings reflect changes in criminal behavior, not in reduced probability of arrest or incarceration (conditional on criminal behavior).
5. Another threshold is the age through which secondary education must be provided free of charge. This varies greatly by state, from as low as 17 in Alabama to as high as 26 in Texas. Some states have no official minimum; for four states it is 19 or less, while in six states it is 22 or higher. The rationale for establishing such a threshold is unclear; no evidence has been identified that this discourages dropout. The contrast is striking with countries in Africa where the abolition of fees has led to celebrated instances of senior citizens returning to complete their primary education.
6. For a general overview of nudges and their policy application, see Thaler and Sunstein (2008). Beyond small nudges, some form of truancy enforcement might also help given that compliance problems are already a significant concern with existing minimum age laws. It is not clear how this could work in practice. But if enforcement could be carried out within a framework of providing for alternative school-hours settings, as in some child labor assistance programs, this might help.
7. I would like to thank a participant at the Brookings Institution authors' conference for suggesting this point.
8. Previous U.S. research has often relied on small samples; among these Dominitz and Manski (1996) find there is wide variation in estimates of returns; Rouse (2004) finds average expectations of impacts do not necessarily differ significantly between advantaged and less advantaged students. High school students often lack clear ideas about the benefits of further education or even how to think about it (Avery and Kane 2004). Students may perceive that returns do not apply to themselves; for example, they do not think that they could go to college. More research is needed on the impact of providing students with more-accurate information on earnings returns, and on the wide range of other benefits of schooling that have been identified in the research literature.
9. Conditional on completing secondary school, results on expected earnings are statistically significant for both boys and girls, although the expectation on completing school is significant only for boys.
10. The focus of Jensen's study is on perceived returns to education. The author conducted a household-based income survey across 1,500 households in nonrural areas, gathering information on education, employment, earnings, and background demographic and socioeconomic characteristics for all adult household members.
11. The information problem is complex. For African American and Hispanic students in the United States, Temin (2017, xvi, 41–42, citing Alexander 2010) suggests that the relatively high likelihood of being incarcerated that they observe may reduce the incentives for students to focus on and continue their education. However, many may not consider the lower likelihood of incarceration among those who graduate high school.
12. For U.S. evidence see Cunha et al. (2013), who find that if average beliefs of African American women matched the authors' objective estimates of the technology of skill formation, then such investments would increase on the order of 10 percent on average.
13. An introductory discussion of low aspirations traps is found in Banerjee and Duflo (2012).
14. Banerjee et al. (2010) use an instrumental variables estimate for this part of their research. Their results suggest, "The average child who could not read anything at baseline and attended the camp was 60 percentage points more likely to decipher letters after a year than a comparable child in a control village" (5).
15. Some well-reviewed NGO programs in developing countries operate with this purpose (Smith 2009).
16. A student is defined as chronically absent if they miss at least 10 percent of school days (U.S. Department of Education 2015–16). See also the Center for American Progress report on truancy (Ahmad and Miller 2015). The Brookings report is also insightful (Jacob and Lovett 2017).
17. After it was implemented, the PROGRESA program in Mexico also added a high school graduation reward consisting of a grant for college studies, housing, or starting an enterprise (Dubois, de Janvry, and Sadoulet 2012). The escalating reward design is similar to programs studied in the contingency management (CM) literature rooted in behavioral psychology. For example, the increase in payments as the child progresses through school can be compared with voucher-based CM treatments in which patients receive voucher amounts that increase with the duration of continuous abstinence from drug use (Higgins et al. 1991). In Malawi the CCT program used monetary vouchers as incentives to reinforce retrieval of HIV tests among rural individuals who underwent screening (Thornton 2008), a technique commonly used in most CM interventions to induce cessation of risky behaviors such as smoking, drug-abuse, and obesity.
18. This result sheds light on how agents strategically respond to specific components of the incentive scheme. Careful consideration thus needs to be given to the policy design.
19. The intervention did not significantly change teacher attendance but merely increased test preparation sessions; this could have been an important factor in the short-term duration of the gains.
20. There is a disproportionate concentration of the eligible but nonparticipating individuals in lagging areas; lagging areas have more people with low incomes, in addition to fewer social workers, and others who help with children in schools, per low income resident.
21. For a 2018 Hamilton Project blog making this point, see Bauer (2018). In the case of SNAP specifically, Hoynes, Schanzenbach, and Almond (2016) find large long-term benefits for children. More generally, early childhood investments can constitute high-return investments (Heckman et al. 2010).
22. The U.S. Department of Agriculture (USDA) estimates, "[As of 2014] 15 million people were eligible to receive benefits" from WIC in any given month, but that "of the 15 million, 55 percent, or just over 8 million people, were covered by the program" (USDA 2014). An earlier USDA study estimates that nearly 13 million individuals eligible for SNAP did not participate (Leftin 2010).
23. Among their other supply-side recommendations were to introduce performance bonuses and ensure adequate payment for practitioners who care for CHIP beneficiaries.
24. For example, microfinance has been made available subject to health lectures and infant checkups (Smith 2002).
25. In Brazil a critical lesson was learned regarding the design and communication of transfer conditions: there was a negative effect on

weight-for-age scores among beneficiary children, attributed in part to misunderstanding of the eligibility criteria (Morris, Olinto, et al. 2004). At least some participating mothers were under the impression that having one malnourished child in the household was a precondition for continuous eligibility. A more encouraging lesson was learned from research on PROGRESA in Mexico: children too young to go to school at the time their families began to benefit from the program still showed positive impacts on their later schooling indicators, apparently an effect of the program's nutritional intervention (Behrman, Parker, and Todd 2009; Todd and Winters 2011).

26. For example, evidence from a randomized experiment in Kenya (Dupas 2011) shows that provision of information on the relative risk of HIV infection by partner age led to a 28 percent reduction in teenage pregnancy. Moreover, self-reported data on sexual behavior suggested substitution away from older (and hence riskier) partners and toward same-age partners. In a similar vein, Jalan and Somanthan (2008) use a randomized evaluation to show that informing households that their drinking water is contaminated increases the probability that they will begin purifying their water. In Bangladesh, households that were informed that their well water contained unsafe arsenic levels generally switched to a safer well (Madajewicz et al. 2007).
27. In general, the evidence on the impacts of stand-alone microfinance programs is ambiguous. MkNelly and Dunford (1999) find that microcredit services bundled with education in Bolivia are associated with improved anthropometrics including weight for height, as compared to the control group. MkNelly and Dunford (1998) find that microcredit in Ghana improved food security and that child weight-for-age and height-for-age were positively and significantly impacted, though no significant impact was found for maternal nutritional status. Hamad and Fernald (2012) find longer microcredit participation in Peru associated with higher BMI, hemoglobin levels, and improved food security. Pitt et al. (2003) find that providing credit to women in Bangladesh significantly improved health outcomes of both boys and girls, but credit provided to men had no significant effects. On average, a 10 percent increase in credit provided to women led to an average increase of arm circumference of their daughter and son by 0.45 centimeters and 0.39 centimeters, respectively, though no impact was found on BMI. Smith (2002) examines effects of health tie-ins (akin to conditional) and credit-only (akin to unconditional) microcredit services in Ecuador and Honduras, and finds participation in both countries significantly increased subsequent health visits, with some effect on good health practices.
28. I would like to thank Jacobus de Hoop of the UNICEF Office for Research for pointing this out.
29. Burnham et al. (2004) find that the mean monthly number of new health-care visits increased by 53.3 percent after fees in Uganda were discontinued, while the increase was 27.3 percent among children under age 5. Immunizations, antenatal clinics, and family planning all increased, despite these services having always been free. Lagarde, Barroy, and Palmer (2012) find that removing user fees for primary health-care services in rural districts in Zambia and for children over five years old in Niger increased use of services by the targeted groups, though the impact of the policy change differed widely across districts. Evidence from Rwanda shows that removal of user fees led to 0.6 additional curative care visits per capita (Dhillon et al. 2012). Lagarde and Palmer (2008) review 16 studies on the effects of user charges on uptake of health services; their findings suggest that removing or reducing user fees increases the use of both curative and preventive services, though eliminating fees may negatively impact service quality. Meanwhile, increasing fees reduced the use of some curative services. Cohen and Dupas (2010) randomized the price at which prenatal clinics sell antimalarial bed nets to pregnant women in Kenya, finding that charging a price can dampen demand very considerably.
30. Other studies include research on the promising but complex Zimbabwe Harmonized Social Cash Transfer Program (HSCT), which targets ultra-poor and labor-constrained households. An RCT examining both conditional and unconditional components showed the program raised vaccination rates, albeit modestly (Robertson et al. 2013). (A caveat is that some of those without conditions apparently learned about and followed them, so this study's conclusions as a conditions versus cash analysis must be interpreted with caution.)
31. There is historical evidence that CCTs have been effective over the lifespan in the United States (Aizer et al. 2016). A CCT program would be similar to one preventing school dropouts, though in part targeted to different populations and ages, and may be best to keep separate. Note also that it is intended that any conditional transfers would be provided in addition to transfers available from existing programs such as TANF, in part because many of the poor may have difficulty achieving the targeted goals due to the "cognitive taxes" they face (detailed in the next section), among other reasons.
32. Suicide is the second-highest cause of death in all of the age ranges 10–14, 15–24, and 25–34, so this statistic is not the result of a concentration of the problem in just a narrow age range.
33. For current data see NIMH (2017).
34. References to this literature may be found in Dean, Schilbach, and Schofield (2018, §§3.1).
35. The study participants were studied for one year, so it is not clear if some study participants returned to criminality after that point.
36. ROSCAs represent a small, informal, and time-limited savings and loan association, lasting for at most a year. Each participant contributes the same amount of money into a pool at each regularly scheduled meeting; at each meeting one participant receives the full pool, using it for any purpose they choose (such as school fees, buying a sewing machine, paying off another debt, or financing a party). This system gives participants access to a sum of money faster than they could accumulate individually by saving at the rate of their ROSCA pooling amount. Among other things, this institution reduces the risks of spending on impulse (or family pressure) before the larger amount can be saved, and then it can be deployed immediately for the intended purpose.
37. For identification, the authors exploit a program rule that established a maximum age for participation when the program was introduced, comparing outcomes at just the border of this age group.
38. Relevant U.S. evidence includes Heckman, Pinto, and Savelyev (2013).
39. I would like to thank a participant at the Brookings Institution authors' conference for suggesting this point.
40. For the report card and further detailed state-by-state reports, see ASCE (2017). Note that the membership of the ASCE, founded 1852, includes some 150,000 "civil engineers in private practice, government, industry, and academia who are dedicated to advancing the science and profession of civil engineering" (1).
41. One of the effects could be an increase in land prices.
42. For an excellent example of inclusive growth diagnostics applied to Bangladesh that includes a key role for infrastructure, see USAID (2014).
43. Early 1990s three-gap models were perhaps the beginning of this literature. See Bacha (1990) and Taylor (1994).
44. Datta (2012) applies a difference-in-difference estimation strategy on World Bank Enterprise Surveys for India (2002 and 2005 rounds) to identify the effect of infrastructure quality on input inventory usage. He finds that firms in cities that were affected by the highway project faced a reduction in stock of input inventories of 6–12 days' worth of production. Furthermore, these treated firms were more likely to change their primary input supplier, indicative evidence on reoptimization of supplier choices, after establishment of better-quality highways. Finally, firms in treated cities also faced lower transportation obstacles to production, while firms in control cities reported no such change. For an overview of the analysis of household surveys, see Deaton (1997).
45. Shifts in capital–labor ratios represents a structural change in the production process. Interestingly, the authors' results suggest that the shift away from labor-intensive occupations also had the social benefit of children staying in school for an estimated two additional years.
46. These were proxied by increased population density, agricultural productivity, and night lights as observed by satellite.
47. Bosker and Garretsen (2012) examine whether economic geography can help explain differences in economic development between countries in sub-Saharan Africa. In doing so, they first construct yearly measures of market access over the period (1993–2009) for each sub-Saharan country, using manufacturing export data to estimate the impact of market access on GDP per worker. They find that market access is an important determinant of economic development, estimating that a 1 percent increase in a country's market access is associated with a 0.03 percent increase in its GDP per worker. Their analysis suggests that most of the impacts they identify are driven by access to other sub-Saharan markets.

48. Jedwab and Storeygard (2018) conclude that the positive effects are "driven primarily by access to domestic cities, and ports," which they in turn argue is suggestive of a role played by roads in providing "access to overseas markets" (4).
49. Interestingly, Chandra and Thompson (2000) conclude that the U.S. interstate highway system causes a shift of economic activity toward newly connected counties, away from unconnected ones. They find that there may even be no net positive benefit, but potentially increased inequality across regions.
50. In the economies of many countries, sector-based clusters (also called industrial districts) play prominent roles (Piore and Sable 1984; Porter 1990). This is clearly true in the United States for high-tech clusters, the most prominent example being Silicon Valley, but is also found in most urban areas; industrial districts in more-basic production sectors are also common in developing countries. China is perhaps the most important contemporary example (Fleisher et al. 2010; Huang, Zhang, and Zhu 2008; Long and Zhang 2011; Ruan and Zhang (2009). High school graduates—at least after attending community colleges—can learn basic technical skills such as routine lab work that are needed for many clusters to thrive. The potential role of encouraging sector-based clusters is another proposed research priority on infrastructure for lagging areas; this may build on area industrial extension services. See the chapter in this volume by Baron, Kantor, and Whalley (2018).
51. The summary perspective in this paragraph is based on discussions with Remi Jedwab of The George Washington University; he deserves credit for any insights, but is blameless for any misinterpretations.
52. I would like to thank a participant at the Brooking Institution authors' conference for suggesting this point.
53. Complementarity may lead to multiple equilibria, and consequently to the need for investment coordination. For a broad introduction to these topics see Todaro and Smith (2014, chap. 4).
54. Countries for which household datasets were used in studies reported or drawn on in this chapter include Argentina, Bangladesh, Bolivia, Brazil, Chile, China, Colombia, Dominican Republic, Ecuador, Ghana, Honduras, India, Indonesia, Jamaica, Kenya, Liberia, Madagascar, Malawi, Mexico, Nicaragua, Niger, Pakistan, Peru, Philippines, Rwanda, Serbia, South Africa, Sri Lanka, Turkey, Uganda, Zambia, and Zimbabwe. A few of the studies drew on data from multiple countries beyond those listed here.
55. It is possible that an implicit ethnic bias, along with a socioeconomic class bias, plays a role in this, as with some other policy disputes; this bias will not be easy to address (Currid-Halkett 2017).
56. See Wilkerson (2010). It may also be connected (at least preunionization) to regions with monopsony power in the North and Midwest.
57. This specific formulation is taken from Todaro and Smith (2014, 86), which is an expansion of definitions in the work of Douglass North (1990, 1991), and draws from Rodrik (2007) as well as Acemoglu and Robinson (2005, 2012).
58. Regarding extraction as literal mineral mining and drilling, the problem is related to the resource curse, or the natural resource trap (Collier 2010). Resource extraction–based economies tend to have very high inequality; inequality, especially inequality of opportunity, is associated with poor economic performance (see e.g., Ostry, Berg, and Tsangarides 2014). More informally, the resource curse ideas have been connected to coal and other mineral extraction in Appalachia (Griswold 2018).
59. In general, more than one set of institutions can achieve these features, but they share protective rules in common; see e.g., Rodrik (2007). The provision of basic social insurance and assurance of predictable macroeconomic stability is also sometimes included in key institutions.
60. One such measure is the squared poverty gap, known as P^2, used by USAID and the World Bank; an introductory presentation and discussion is found in Todaro and Smith (2014, chapter 5).
61. The UNICEF child-poverty report card found that U.S. child poverty increased by 2.1 percentage points to 32.2 percent between 2008 and 2012 (UNICEF 2017). In 2012, 24.2 million children were living in poverty, a net increase of 1.7 million from 2008. Among all newly poor children in the OECD and/or EU region, about one third are in the United States. In 2013, 15 percent of youth in the United States were not engaged in education, employment, or training—an increase of 3.0 percentage points since 2008, the highest increase among all OECD countries. Child poverty increased in 34 states from 2006 to 2011. The largest increases were in Hawaii, Idaho, Nevada, and New Mexico. However, in absolute terms, a large number of children fell into poverty in California (221,000), Florida (183,000), Georgia (140,000), and Illinois (133,000). On the other hand, Mississippi and North Dakota saw notable decreases. A wide range of additional data and references on child poverty are reported in Alston (2018).
62. For an overview of the connections between region- and identity-based inequality and conflict, see Todaro and Smith (2014, §§14.5).
63. Bureau of Labor Statistics (BLS) data show that the unemployment rate in the United States fell to 3.9 percent as of August 2018 (BLS 2018). In absolute terms, the number of unemployed workers has fallen to 6.2 million. On the other hand, the labor force participation rate has remained fairly stable at 62.7 percent.

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Highlights

In this paper, Stephen C. Smith relates findings from the development economics literature to U.S. policy problems, highlighting programs that have the potential to assist lagging areas in the United States. In particular, he examines policies that could improve outcomes in education, health, infrastructure, and poverty amelioration in the United States.

The Proposals

Raise the minimum age for compulsory school attendance.

Provide information on the effects of schooling for junior and senior high school students.

Establish paraprofessional tutor programs to address a range of impediments to learning.

Implement and extend conditional cash transfer and cash-plus programs in lagging areas in the United States.

Facilitate family participation in existing health-care and nutrition-assistance programs by instituting automatic coverage for newborns and designing incentives to encourage continuous enrollment.

Increase the accessibility of benefits programs by incorporating provisions that would account for the mental strain of poverty.

Expand data collection to improve our ability to diagnose and address problems in lagging areas.

Benefits

Development economics research often indicates important questions for further study in the United States, and provides useful stimulus for new ways of thinking about addressing our own challenges. Much can be accomplished by extending participation in already-available schooling, and encouraging greater participation in programs of assistance for basic nutrition and health.

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